

Bob Cooper's

APRIL 15 2006

SatFACTS

MONTHLY



Reporting on "The World" of satellite television in the Pacific and Asia

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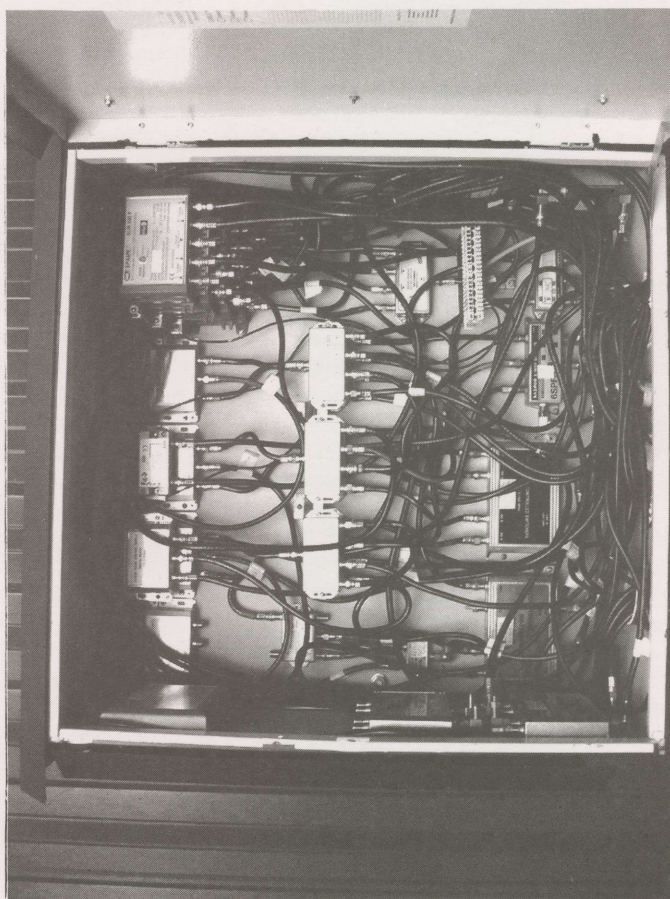
**Interference
that is not
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does a
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**Survey:
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cameras**

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Vol. 12 ♦ No. 140
Price Per Copy:
NZ\$10/A\$11/US\$/Euro8



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card debacle?
See pages 20, 22**

Hualin Pty Ltd

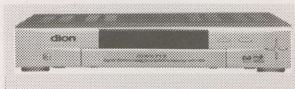
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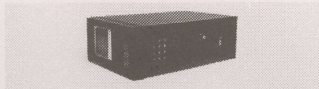
Specials this month

DT800PVR - Digital Receiver



- 40Gb HDD = 40hr Record time
 - 2x CI CAM Slots
 - DiSEqC 1.2
 - **Fibre Optic Output Capability**
- Price: \$390 AUD + GST

Satlook - Signal Meter



- Digital, Analogue and combined versions available
 - A must for the professional
 - Simple menus and functions
- Price: Phone up for Quote

DreamMAX - DT470



- Irdeto embedded
 - 4900 Channel Memory
 - DiSEqC 1.2
 - User Friendly
- Price: \$200 AUD + GST

Everything? Yeah we got

LNB

- Zinwell C Band
- Zinwell KU Band
- MTI C Band, Superhigh gain
- One Cable Solution - CBand
- Dual Output KU 11300 MHz

Positioners

- Superjack EZ-2000
- Superjack DP-6600, DiSEqC 1.0/1.2
- Technosat DP-200, DiSEqC 1.2
- Manual Actuator Driver - EW101
- SAP 2000: 99 Memory positioner

Actuators

- Superjack HARL-3618, 18" Actuator
- Superjack HARL-3624, 24" Actuator
- Superjack DG-120, H/H Mount

Receivers

- SuperNET CA, Irdeto Embedded
- Success, Free-to-Air
- Dion DT-370, Free-to-Air Receiver
- Dion 2x CI, Hardware ALCAMed
- ChangHong, Mediaguard embedded
- SuperNET Terrestrial, DVB-T
- Phoenix High Definition STB

Dish and mounts

- 1.2, 1.8m Solid Prime focus
- 45, 60, 65, 85cm KU dish Offset
- 2.13m, 2.27m, 2.4m, 3.0m, 3.07m, 3.7m, Mesh Dish, Light and Heavy Duty PSI and JOYSAT Available

- CBand Wall brackets
- CBand Concrete mounts and stands
- KU Gutter mounts
- KU Wall mounts
- KU Float mounts
- KU Tinroof mount

Dion 818 CI - Digital Satellite Receiver



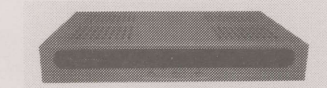
- Slim Size and User Friendly OSD
- 2x CI (Common Interface) slots
- Hardware ALCAMed

SuperJack H-H Actuator, DiSEqC embedded



- All it takes is one coaxial cable....
- NO MOTOR CABLE REQUIRED
- DiSEqC Positioner EMBEDDED!

Supernet - Terrestrial DVB-T



- Digital Terrestrial Receiver
- Slim Design
- High Quality Picture
- Easy to install and use

Dion316 - Digital Satellite Receiver



- FTA + Software Patched
 - 4000 Channel Memory
 - DiSEqC 1.0/1.2 Compatible
- Price: \$170AUD + GST

Switches and Splitters

- 2 and 4 way DiSEqC switches
- 0/22kHz switches
- 2 and 4 way cable splitters
- V/H Multiswitch
- 0/12V Switch

Cable - 15m, 25m, 305m packs

- RG6-U Dual Shield Coaxial Cable
- RG6-U Quad Shield Coaxial Cable
- Cat5 Actuator Cable

Plugs

- F Connectors, Screw or Clamp types
- Cable joiners
- AV Splitters
- Cable Strippers
- Cable clampers
- Various other joiners and accessories e.g. RCA/SCART cables and converters

Misc

- 2.4GHz AV Sender
- Irdeto 2.06B CAMs, Viaccess CAMs
- Satlook Digital Signal Meter
- Satlook Analogue Signal Meter
- Satlook Digital + Analogue combo
- Satellite finders
- Angle level measure instrument
- High Quality Compasses



SatFACTS MONTHLY

ISSN 1174-0779

is published 12 times each year (on or about the 15th of each month) by Far North Cablevision, Ltd.

This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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<http://www.apsattv.com>

Subscription Rates

Within NZ: \$70 p/y
Australia: AV-COMM Pty Ltd.
PO Box 225, Brookvale,
N.S.W. 2100
61-2-9939-4377
Elsewhere: US\$75 p/y
All copies sent airmail post.

The fine print

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our 12th year!

COOP'S COMMENT

B1's "rest period." On Thursday March 30th at 6:52PM, just as 550,000 New Zealand homes were clustered around the TV tube to catch the country's weather forecast, the screens went blue/dark/ snowy, a condition to be endured until around 9AM Friday March 31. Optus B1, the 'problem satellite' of the Optus fleet, had done yet one more 'walk-about'.

Sky NZ's 550,000 satellite fed clients, an unknown quantity of NZ terrestrial TV transmitters fed through B1, radio networks, fire department and ambulance pager alert systems, in-store background music and many more customers were suddenly dead. In Australia, B1's Imparja and Nine-Network SNG feeds could no longer connect, on the eve of the first football coverage of the season which B1 had been contracted to link. ABC radio stations, independent radio networks and more also failed.

B1 has gone walk-about previously a minimum of twice, possibly three times. None have lasted for the 14 hours of March 30-31. Soothsayers were quick to prognosticate that, "this one was the big one" - there would be no recovery. They were wrong. B1 may not have nine lives but it certainly has exhibited the endurance to confound critics of one life.

A satellite that is approaching 14 years of in-service age, is, in human terms, 70+. Parts do wear out, life-blood fluids and gases (such as hydrazine which is a propellant used for adjusting the satellite's orbital position) approach 'empty'. The metal skins protecting the electronics becomes stressed, pitted by micrometeorites, and by operating 24/7 in 13 years 7 months has piled up 118,440 continuous hours of being 'hot' - functional. Satellites depend upon solar radiation captured by 'solar panels', converted to DC electricity than can be stored in extraordinary batteries, for hour-to-hour functions. Solar panels are lifted into space folded against the central core body of the satellite (where the electronics is packed), and once in orbit, they are directed by radio command to unfold and stretch out, positioned so as to intercept the maximum available sunlight. The sunlight is of course the lifeblood of the satellite for without it, the batteries would not charge and nothing electrical would function - for long.

B1 sits, currently, at 160E. It got there after rocket launch by China (August 1992) through a delicate, microsecond timed series of steps that began with lift-off from earth and ended with the satellite having been manoeuvred in spiral steps to the geostationary/Clarke orbit height of 35,600km/22,300 miles. Once at the intended location, with solar panels unfurled and directed to point at the moving target (the sun), the satellite is stabilised to point its uplink reception and downlink transmission antennas at a particular spot on the planet below (the so-called 'boresight' region). B1 is not totally stable in space (none are); the earth's gravity, the moon's weaker gravity pull, solar winds and a constant bombardment by specks of interstellar dust constantly push and pull, shove and modify the actual spot in space. It is common practice to draw an imaginary box, 70 miles on a side (width, height, depth) and then by radio command attempt to maintain the satellite inside the box, something the satellite on its own will not do. B1, left to its own response to the various forces pushing and pulling, would over time end up someplace above Quito, Ecuador - a fair distance from 160E (Quito being at 78W). B1 is commercially attractive only because it stays in one spot, allowing thousands or millions of earth-located dish antennas to find it, lock on it, and still be "seeing" it months and years later.

Therefore 'flight adjustments' as gravity and other forces ply on B1 are both mandatory and, after 13 years and 7 months, perhaps routine. At 6:51PM March 30th, a flight control technician working for Optus was performing a 'routine station keeping manoeuvre'. In the process, "B1 lost boresight" which resulted in all Australia and NZ users losing satellite signal. Translation? The satellite's up and downlink antennas were no longer pointed at us. The best explanation, or perhaps the only one Optus is willing to reveal in public, suggests, "the most probable cause (was a) fuel feed anomaly to one of the thrusters on the satellite." Thrusters are tiny jets with toothpick diameter holes that allow hydrazine gas, stored on board, to "burp" out into space; a way to actually move B1 from hither to yon. Thrusters fire in microsecond bursts, allowing microlitres of propulsion fuel to escape, 'powering' B1 in a new direction or attitude. Hydrazine fuel is a life-time establishing component for B1 - when the tank is empty, well, Quito, Ecuador? Something (or someone) wasted precious hydrazine on March 30th - leading to a 14 hour period during which Optus was helpless to restart B1. It was all about electricity (see page 4).



In Volume 12 ♦ Number 140

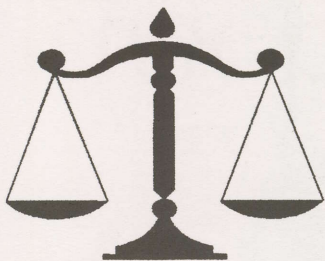
Interference that is NOT interference -p. 7; Surveying commonly available 2.4 GHz wireless cameras -p. 14; Optus dumps thousands of Aurora cards -p. 20; Technical Topix: -p. 22

Departments

Programmer/Programming -p.2; Hardware/Equipment Update -p. 4; SatFACTS Digital Watch -p. 23; Supplemental Data -p. 26; With The Observers -p. 27; installing dealers -p. 29

-On the cover-

Is this where 'typical' consumer multi-media in-home distribution systems are headed?

PROGRAMMER
PROGRAMMING
PROMOTION

UPDATE

APRIL 15, 2006

"Sniffing" at 2.4 GHz

"The article on 'sniffing' S-band signals was interesting. I have done a little of this using a mid-size 'Grid-Pak' type aerial intended for wireless LAN, coupled to a Gardiner S-Band LNB and an old Av-Comm home built analogue receiver. Even with this sitting inside the workshop, by moving the aerial a couple of degrees, I was first watching a neighbour's TVBJ and then a new house with Antenna being transmitted. I wonder if the ENG signals from TV helicopters might be viewable - Europeans have found this to be the case although don't know whether S-band is so used here or in NZ."

Roger Woodward, NSW

Older ENG (electronic news gathering) transmission systems typically use FM (analogue) but in the 2000-2300 MHz region. With a LO of 3650, 2000 would appear as 1650 while 2300 would be 1350. PM - can you help here with news-copter specifics? Dick Smith/DSE does offer a trio of 'Grid-Pak' antennas; L4720 claims 15 dB gain, L4721 19 dB and L4722 25 dB. Each has a type N female connector.

Echostar RCUs

"In Europe, Echostar top of the range receivers use remotes which are totally incompatible with anything else (SF#139, p. 20), have always been extremely expensive to replace, and routinely second-hand Echostar's arrive without a RCU. Last year while visiting satellite shops in Dubai, a huge pile of Echostar remotes jumped out at me; not US\$50 each but rather US\$3! I didn't need one but for that price, I could not resist. Perhaps there is a small mail order business here for someone who can stock the Dubai source items?"

Siam Global, Bangkok, Thailand

And see p. 22, Technical Topix, here.

Golden days of radio

"Your editorial concerning the 'golden days of radio' (SF#139) brings back memories as both my parents, especially my father, were involved in radio drama productions such as 'Portia Faces Life'."

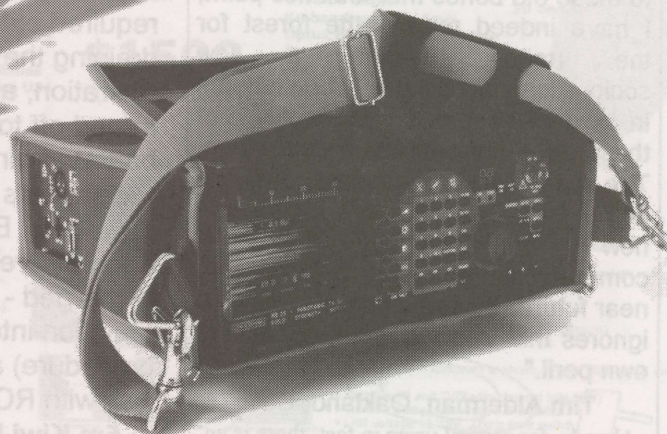
OO, NSW

Where is digital for NZ television? Still be 'studied' with the government doing its best to stay out of the loop and forcing the country's limited broadcasting industry to make a decision between terrestrial DVB-T and satellite DVB-S. Australia took an early and strong government led approach to planning, in favour of DVB-T with heavy restrictions on how the additional digital 'bandwidth' could be used. The result is a 15% or lower conversion to DVB-T versus analogue terrestrial. The US has taken a more free-market approach but with 85% of all homes either subscribing to cable (68%) or satellite (17%) there is no model here for NZ where there is no real cable and satellite has been a monopoly. The UK got off to a bad start until government created 'Freeview' which is a combination terrestrial and satellite service offering anyone who would install a sub-100 pound sterling STB offering 30+ channels of television as a replacement for 4 or 5 channels of analogue. In New Zealand, government keeps stumbling over the original TVNZ created nation-wide terrestrial microwave point to point redistribution network operated by BCL which, if the country opted for a satellite DVB-S replacement for terrestrial networking, would lose a very significant chunk of its annual revenue (as terrestrial analogue transmitters shut down leaving a digital microwave network in place with virtually no TV networks as customers). The government owns and controls this network and is not anxious to see its value disappear. However, covering the full country with an entirely new overlay of UHF band DVB-T transmitters is, based upon the UK experience, likely to result in approximately 25% of all homes left without over the air television when present analogue transmitters are shut down. The answer to that is to either operate DVB-T (terrestrial) and DVB-S (satellite), using the S-version to fill in where the T version cannot reach. Or, as the S-version will reach essentially all homes anyhow, why bother with the T at all? The costs for homes will be roughly the same whether it is S or T - new STBs as an interim measure followed over time by replacement of all TV and VCR/HD devices. Nobody, least of all government, is willing to tell the country the truth about the cost of replacing analogue with digital (for a one TV set home, around NZ\$400 going up by \$150+ for each additional TV set or VCR) leaving government less than anxious to take a lead in the planning. They would much rather it be seen as a 'broadcaster move' rather than a government dictum, hoping to escape the wrath of the electorate when it finally does become apparent that for homes to continue to have essentially the same TV they now have will cost significant money under a digital world. Alas, the clock is running and it is unlikely this 'secret' can stay bottled up much longer. In the interim, everyone is writing reports and hoping to escape being made the fall guy (or gal). Stay tuned.

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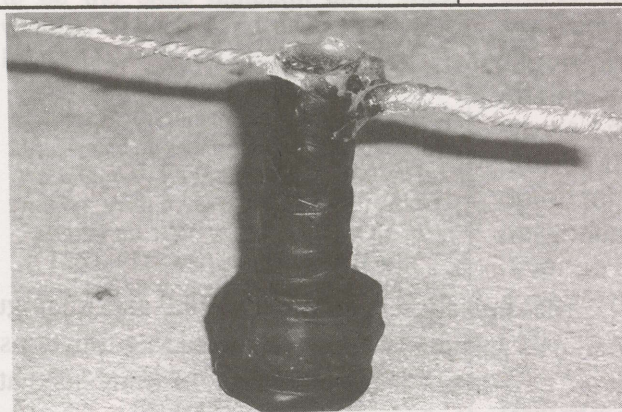
UNAOHM

Since 1935

Dipole feeds for 2.4 GHz

"The photo here shows a crude effort for building a quick-dipole for L-band reception (weather satellites). Start with a piece of RG213 in a male type N connector. First carefully measure a quarter wavelength (33mm at 2400 MHz) from the cut end of 213. Separate the outer braid from the dielectric, then carefully remove the dielectric so you have the copper centre and the copper braid. The braid goes in one direction to create half of a dipole, and the centre goes in the opposite in-line direction to create the second half of the dipole. The two sides cannot touch one another (would short out the antenna); use some epoxy to fix them in position and insulate from one another. Then I tinned both sides with solder to give the dipole strength. Works quite well."

RW, Sydney



Clairvoyant?

"Somehow SatFACTS always seems to find that one example which even the most stubborn cannot ignore. SF#139 certainly drove home to these old bones that until this point, I have indeed missed the forest for the trees. Imagine a low socio-economic school, 117 students in one class grade, and only 1 of these does not possess a cell phone. The really tells a tale, one I believe portends as you suggest an entirely new and totally different communications world in the very near future. It seems that anyone who ignores this trend is doing so at their own peril."

Tim Alderman, Oakland, Ca.

Already, for several years in fact, there is an underground of folks creating cell phone cards that circumvent the pay-to-use routine. We saw the first one when a visitor from South Africa demonstrated it working in his roving fone. Hey - pork chops and grits, today?

HARDWARE EQUIPMENT PARTS

UPDATE

APRIL 15, 2006

Optus B1 failure - electricity supply. If you are reading this *before* page 1, *stop*, read it and *then* come back. The amazing 14 year life-time batteries on B1 work 24 hours a day - more than 122,000 hours at end of life (theirs or the satellite's). There are no batteries in your possession that you could charge and discharge and recharge for 122,000 hours. Now place them 22,300 miles above earth in a tin-can and you are asking a great deal of the devices. Solar panels, which degrade several percent in capture efficiency per year, grab solar light rays for conversion to battery stored DC. The solar panel array, to operate at peak efficiency, must 'track' the sun in the sky - which means the solar panel array is constantly moving tens of degrees each hour. Tracking requires motors and electronic

sensors to constantly tell the operations computer where the sun is at any point in time, and, in turn to direct the panels at the sun. All of this requires electricity from the batteries (as do the uplink receivers, the downlink transponders et al). If the battery power available falls down, everything suffers and in the end various non-priority functions have to be shut down to reduce the battery load in favour of the priority (such as tracking and satellite stability) functions. Twice each year (March and September), for several days, the alignment of the satellite and earth and the sun (and to a smaller extent the moon) become unfavourable - the satellite is shielded from the sun by the earth and

during this period of days the battery power available is reduced - on a day to day basis, the satellite requires more power out of the batteries than the sun is able to dump in. When B1 went 'walk-about' at 6:52PM NZT March 30th, the battery charge level was low. To recover the satellite from its wandering ways required extensive use of the solar panel motors, further draining the available battery supply. In an emergency operation, all non-essential "satellite-life-saving" functions are turned off to further reduce loading on the batteries. The biggest battery drain comes from the uplink receivers and downlink transmitters - and they logically are first to be turned off. And they were. By 9PM, Optus had B1 fully under their control, but unable to restart the transponders until the batteries had recharged - which required around 11 hours of unloaded solar radiation into the batteries. All of this is SOP (standard operating procedure) as the historical SPACE Pacific TV program series visit with RCA in 1978 explains. Go back and find that tape.

5m Kiwi built fibreglass, two piece dish recently taken out of active service available central-north ends of North Island (NZ). Contact Bill Black (black@iprolink.co.nz; 09-408-7337). Locating dishes in this size range in decent working order is a challenge - this one probably won't last long.

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**Phoenix 2.35m Motorized
Extra Heavy Duty Mesh** \$180 each
Buy 10 get one Free!



**Folding Arm Dish
best dish for caravan & camping**
64cm \$25/each
78cm \$48/each
88cm \$55/each
North Elev Bracket \$5 each

Irdeto 2.06B CAM	\$110	PBI C+Ku band LNBF	\$65
Viaccess CAM	\$110	Zinwell C band LNBF	\$35
65cm Azure shine offset dish	\$28	Zinwell Ku band LNBF	\$25
75cm Azure shine offset dish	\$40	MTI C band LNBF	\$25
85cm Azure shine offset dish	\$45	MTI one cable solution LNBF	\$45
One leg gutter mount	\$18	Satellite finder	\$25
Two leg gutter mount	\$22	RG6 striper	\$20
Tin roof mount	\$22	RG6/RG11 crimper	\$30
Wall mount	\$15	Angle meter	\$35
Superjack H-H motor	\$95	Compass High Quality	\$10
2.3m SD mesh dish	\$150	RG 6 Crimp Connector 100 pack	\$25
3m SD mesh dish	\$340	22K switch	\$10
3m HD mesh dish	\$380	Two way DiSEqC switch	\$10
3" 2.5m galvanised pole	\$30	Four way DiSEqC switch	\$12
3" 3m galvanised pole	\$35	Satellite 2 way splitter	\$1.50
3" 3.5m galvanised pole	\$40	Satellite 3 way splitter	\$2
3" Triangle Pole for C band dish	\$50	Satellite 4 way splitter	\$2.50
Speaker Stand for caravan use Ku dish	\$45	4 way multi-switch	\$35

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Multi-beam 1m offset dish

Ku band satellite from
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Just one dish to receive all
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Up to four
LNBF
30 deg.
wide



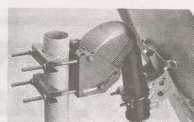
Phoenix 2800A \$110
The Best FTA Available
Quantity price available



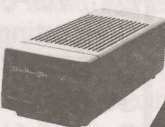
Dreamax DT470 \$160/
each Irdeto Embbedded
Satellite Receiver



**Zinwell 15K
LNBF \$28/each**
for box of 24



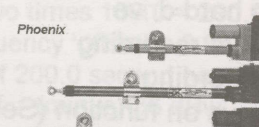
**Moteck SG2100
Motor \$105/each**



**SuperJack EZ2000
Positioner \$50/each**



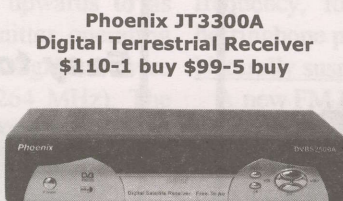
**Moteck V Box II
DiSEqC 1.2 Positioner
\$65/each**



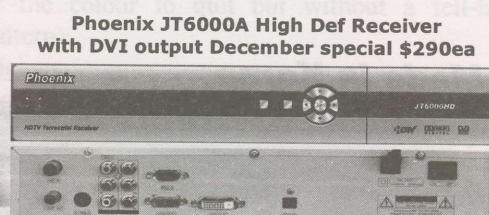
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From \$35/each to \$220/each**



**RG6 Cable
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Quad shield
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**Phoenix JT3300A
Digital Terrestrial Receiver
\$110-1 buy \$99-5 buy**



**Phoenix JT6000A High Def Receiver
with DVI output December special \$290ea**

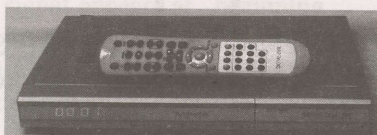
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Optus B3/Pas 8 Free To Air channel Package

5x Phoenix 2800A digital satellite receiver
5x 64cm foldable arm dish
5x 11.3GHz/10.7GHz/universal
Ku band LNBF your choice
5x Gutter mount/wall mount
One Box RG-6 Cable

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embedded cam and 2x cam slots**



Optus B3/Pas 8/Optus C1 Irdeto embedded channel Package

Koscom 1600A Irdeto cam embedded digital satellite
receiver x 5
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Gutter mount/wall mount x 5
One Box RG-6 Cable
That's only \$255 each

\$1275 5 Unit Package Price

C band free to air channel Package

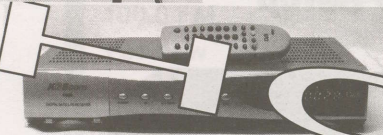
5x Phoenix 2800A digital satellite receiver
5x 2.3m SD mesh dish
5x Zinwell C band LNBF
5x 3" 3m galvanized pole
One Box RG-6 Cable
That's only \$395 ea crazy!

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• Built in, rechargeable battery.
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• Transponder content analysis.



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Irdeto Embedded Satellite Receiver
\$200 with free Optus Aurora card
Buy 10 or more and get 10% dis-
count & one box of 305m RG6 cable
for free**

Made in Sweden



COMBO \$2295

The combination of SATLOOK Digital NIT and TVLOOK
• Input frequency: 2-900 MHz and 920-2150 MHz
• 4.5" B/W Monitor for PAL/NTSC/SECAM
• Lots of memory positions for spectrum pictures
• RS232 for PC-connection
• Built in, rechargeable battery. Only 7kg complete with
carrying case
TV-PART:
• 2-900 MHz spectrum analyzer
• Presents full range spectrum (and expanded)
• Very high accuracy, ±1dB (at 20°C)
SAT part:
• 920-2150MHz spectrum analyzer. Digital BER, QPSK and
SN-ratio
• Satellite-ID and TV/Radio-channel info (NIT)
• Tuneable audio bandwidth 5.5-8.5MHz
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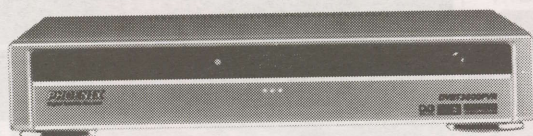
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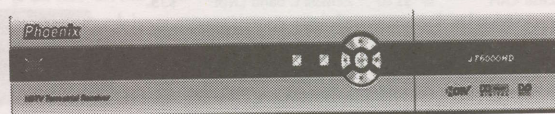
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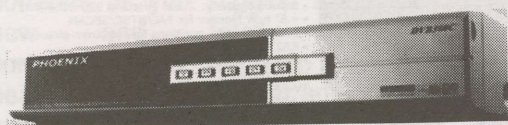


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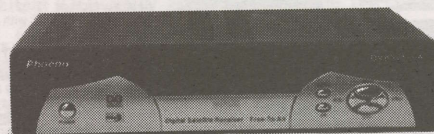
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When Interference is NOT ... Interference

In the PAL (B) transmission system, the main video carrier is assigned to one frequency (such as 196.250 MHz), the transmitter is adjusted to place a companion audio carrier +5.5 MHz (above) the video carrier (201.75) and a lower-level (weaker) colour sub-carrier inserted at +4.43 MHz (above) the video carrier frequency; 200.68 MHz in our example.

The FM radio broadcast band, typically 88 - 108 MHz, is roughly "half" frequency to several Band III TV channels (88 x 2 is 176; 108 x 2 is 216 MHz) and most PAL-B terrestrial TV assignments place television from 175 upwards to as much as 230 MHz. A FM broadcast transmitter operating between 88 and 108 MHz will also generate a signal at twice its own frequency (and thrice, or 3X 88 = 264 MHz). The transmitter designer places 'low pass filter' circuits just ahead of the transmitter's output connector, typically expecting to reduce any "2x" or "3x" energy by a minimum of 75 dB. Failing adequate inside low pass filtering, an external filter could be added between the transmitter output connector and the FM broadcast antenna. Such a filter (see p. X) adds additional attenuation to any energy above the filter's stop-band frequency (typically low pass filter designs begin at 120 MHz attenuating by 60-80 dB energy appearing above the stop-band design frequency).

A TV signal operating with a visual carrier of 196.25 has a colour sub-carrier of 206.68 whereas a FM transmitter on 100.0 would have a second harmonic of 200.0 (an FM broadcast transmitter operating on 100.34 would be exactly 1/2 the colour sub-carrier frequency of 200.68). If by whatever means a secondary (interference) signal appears at or close to the colour sub-carrier, the TV receiver's colour demodulator will often disengage leaving a black and white only image with varying degrees of herringbone interference

The calculations:

- 1/ Colour subcarrier for 196.25 = 200.68
- 2/ Two times 100.0 = 200.0
- 2A/ Frequency 'offset' + 0.68 (MHz)
- 3/ Measurement of 200.0 second harmonic: in excess of - (minus) 86 dBW
(requirement is -75 dBW)

overlaying the image (it is theoretically possible, given just the 'wrong' combination of signal levels and interference frequency, for the colour to quit but without a tell-tale herringbone pattern).

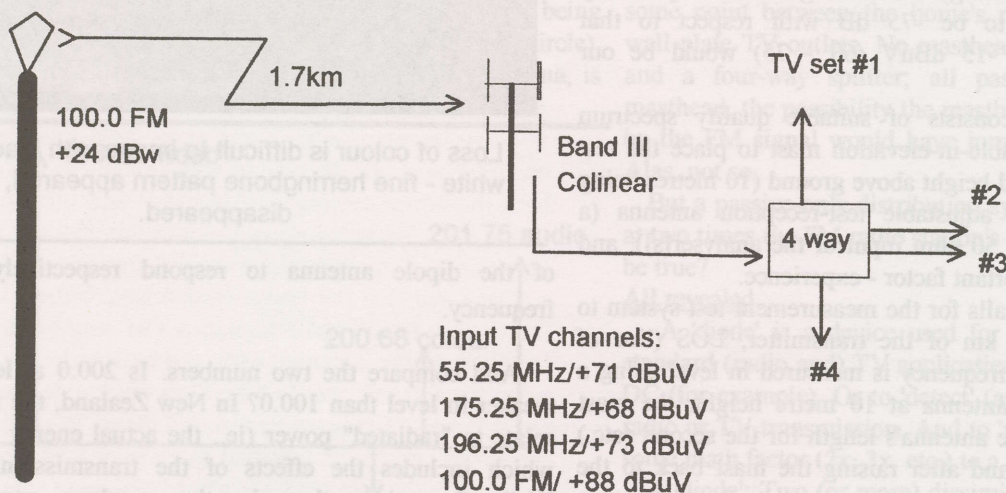
Naturally suspicious

A new FM band transmitter (100.0) and one (or more) FTA off-air viewer complaints - a loss of colour and an annoying herringbone pattern. Turn off the FM transmitter, the interference clears. By operating the transmitter at varying power levels starting at ten watts and increasing the power in 3 dB increments, the colour first stops at around 20 watts and the herringbone pattern appears at 40 watts. The full transmitter power of 250 watts is only modestly "worse" than 40 watts after the colour quit (20 watts output).

Quick math: Double 100 = 200.0 and the colour sub-carrier is at 200.68. Quick conclusion: The second harmonic level coming out of the transmitter plus transmitting antenna *must* be strong enough to be arriving at the FTA TV reception antenna at a level capable of 'killing colour'. In other words, the transmitter is 'guilty' and either it be replaced, repaired, to amended with an add-on low-pass filter. The fun was just beginning.

Transmitter system specs

This FM transmitter consists of two separate units; a 1 to 50 watt (adjustable) 'driver' unit which creates the full stereo



signal, and, a 20 dB gain solid state amplifier with a maximum output of 250 watts. There is a third element - the transmission antenna, which will have an effect on the second (third, etc.) harmonic energy 'radiated' into the air.

The transmitter, a Ramsey model PX50, is factory rated at second harmonic attenuation of -75 dB. This means that at 50 watts output (full output for the Ramsey), the second harmonic 200.0 MHz output will be 75 dB lower in level (0.000014 of a watt - 14/100,000).

In fact, the 250 watt solid state amplifier requires 3.8 watts of drive (power) from the Ramsey to reach rated output. And the amplifier has its own built-in low-pass filter, rated at -70 dB. It is at this point that the 'numbers' become intimidating. If we assume a full 50 watts from the Ramsey resulting in 14/100,000 of a watt at 200 MHz which is next amplified by the 20 dB FM amplifier (that statement alone is mis-leading) and then further attenuated by the amplifier's built-in low-pass filter (-65 dB) we end up with the following math:

$$\text{-75 dB (+) 20 dB (-) 65 dB = -120 dBw}$$

Meaning, the calculated second harmonic should be -125 dB reference the primary signal at 100.0 MHz. But the Ramsey is only arriving at the final amplifier at 3.8 watts; 11 dB below full output power. Therefore, the actual x 2 signal level leaving the Ramsey is -11 (+) - 75 or -86dB (reference a full 50 watt output). Math again, with amplifier:

$$\text{-11 (+) -75 (+) 20 (-) 65 = -131 dBw}$$

As a peg in the ground reference, -80 dB turns a 250 watt transmitter into 1/100,000th of a watt (0.000001).

Logic at work

We said there was a third ingredient participating in this; the transmitting antenna. It happens to be circular polarised which means, like Intelsat C-band signals, the radiated energy is neither vertical, nor horizontal; it is a 'corkscrew' like pattern with the sum of the power distributed evenly through a full 'circle' (i.e. pick any 'degree' number between 0 and 360 - defining a circle - and 1/360th of the full power will be at that point [such as 259 degrees with 0 - 180 being straight up and down/vertical, and 90-270 horizontal]).

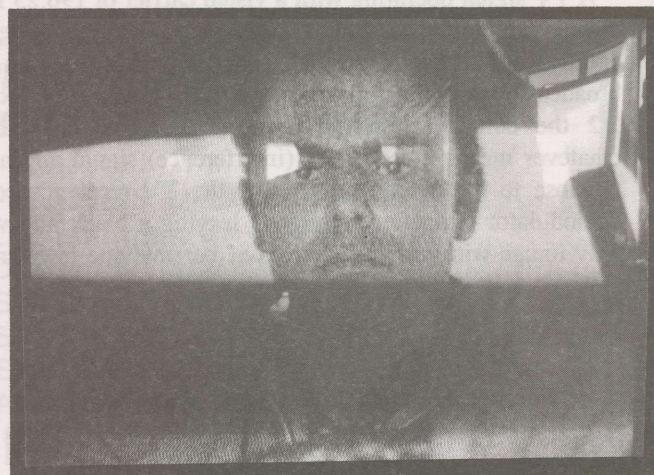
The procedure in checking for 'radiated' (key word) energy at both the base (100.0 MHz) and harmonic (200.0, 300.0) frequencies is to first establish a reference signal level. This would be the actual 100.0 MHz signal. If, just to hang a number on it, a test measurement receiving system found +60 dBuV of 100.0 MHz energy and the regulations require any harmonic frequency to be -75 dB with respect to that reference level, then -15 dBuV (60 - 75) would be our benchmark.

A test system consists of suitable quality spectrum analyser(s), an adjustable-in-elevation mast to place the test antenna at a prescribed height above ground (10 metres being typical), a frequency adjustable test-reception antenna (a dipole matched to the 50 ohm input of the analyser[s]), and perhaps the most important factor - experience.

Normal procedure calls for the measurement test system to be located within a km of the transmitter, LOS (line of sight). The operating frequency is measured in level using a test dipole receiving antenna at 10 metre height, the mast lowered to readjust the antenna's length for the second (etc.) harmonic frequency, and after raising the mast back to the original height, a new measurement at the harmonic frequency. That seems logical enough. Between the 100.0 and 200.0 measurements, nothing changes but the adjustment



RFS Inspector David Cooper (hat) measuring 200.0 frequency at home experiencing colour sub carrier drop out with tuned to frequency dipole.



Loss of colour is difficult to image with black and white - fine herringbone pattern appeared, colour disappeared.

of the dipole antenna to respond respectively to each frequency.

And compare the two numbers. Is 200.0 at least 75 dB weaker in level than 100.0? In New Zealand, the regulations relate to "radiated" power (ie., the actual energy 'in the air' which includes the effects of the transmission antenna). Well, first time through, the numbers appeared not acceptable, lending credence to the concern that the station's second harmonic was indeed wiping out off-air colour TV



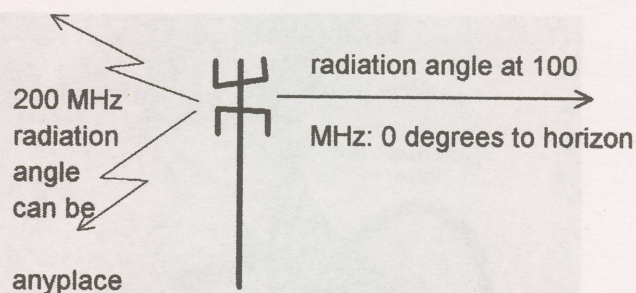
Possible after-market fix if, in fact, the transmitter's low pass filters are not providing adequate suppression of energy at two-times the FM operating frequency. This 300 watt capable www.progressive-concepts.com 0-110 MHz passband filter attenuates the 200 MHz region by 60+ dB; fits at transmitter output and transmission line to antenna fits at opposite end.

reception. Given the two low-pass filter networks (one in the transmitter, one in the amplifier), how might this be possible? Believe in the numbers

If the Ramsey low-pass filter truly reduces radiation above 120 MHz by 75 dB, and the amplifier has 65 dB of attenuation for above 120 MHz, how could you possibly end up measuring less than -75 dB on 200.0 MHz?

Circumstances. First of all, the TV channel's colour sub-carrier is at 200.68, and our test reception device (a H-P or equivalent spectrum analyser) has to be able to separate (display) 200.68 from 200.0 (the colour TV sub-carrier is in the +60 dBuV region when attempting to measure the 200.0 level which should be in the minus dBuV region). By narrowing up the spectrum analyser bandwidth, adjusting the sweep rate, the two can be sorted. But there can be a trap here.

And the antenna, that "third element" in the transmitting system. A 'standard' vertical, horizontal or 'slanted' polarity transmitting antenna will be 'matched' by the test receiving antenna - slanted equals slanted, for example, or the tests are not valid. Circular presents a challenge - not the least of which is not having a circular polarised test reception antenna. Textbooks suggest that if the transmission is circular and you are using (any) single polarity reception antenna, you will capture approximately 50% of the total power being radiated (ie., a vertical test antenna 'sees' half of the circle). So if you measure 0 dBuV on a linear (vertical) antenna, is



that number 'adjusted' by adding 3 dB to determine the *actual* field level? *Think about it.*

There are more complications. The radiated signal from the transmitting antenna is more or less 'flat' in a straight line to the optical horizon; not up into the air, not downward into the ground. But that is only true at the antenna's operating frequency - 100.0 MHz in our case. At the harmonic frequency, 200.0 MHz, how does the signal leave the antenna? Even the antenna's manufacturer does not know - at any frequency other than the primary (operating), it is going to randomly escape into the air. And as it turns out, the antenna has significant (but unknown) "gain" at the second harmonic frequency, but (also previously unknown) only at some weird radiation angles (such as almost straight down towards the ground below the transmitting antenna).

End of day? The tests cannot be believed, primarily because the true radiation pattern (angles, direction) of the unique circular polarity antenna cannot be determined. The transmitting antenna follows one set of rules at the primary 100.0 MHz frequency, an entirely different set of rules at the second harmonic frequency (200.0 MHz). At 100 MHz, we know the rules and how it works; at 200 MHz, there is not a clue, even from the people who designed the antenna.

Meanwhile - back at the FTA home

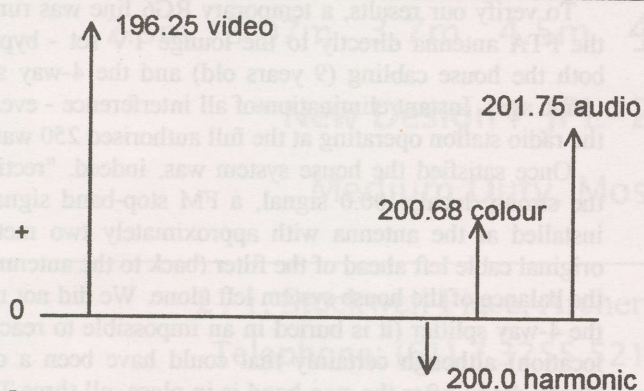
Through all of this there were conflicting facts. The initial RFS tests were at the offended home where the lack of colour interference was verified on 3 different television sets. OK - that said either all sets were defective, or something ahead of them was. But when a ten metre mast was equipped with a dipole antenna for 196.25 and one of the in-house TV receivers was connected, there was no interference; none at all. That seemed to suggest the signal was being corrupted at some point between the home's receiving antenna and the wall-plate TV outlets. No masthead amplifier - simply cable and a four-way splitter; all passive. Had there been a masthead, the possibility the masthead was being 'overloaded' by the FM signal would have jumped to the top of the list. Alas, not so.

But a passive-only distribution system creating interference at two times the FM radio station's frequency? How could this be true?

All revealed

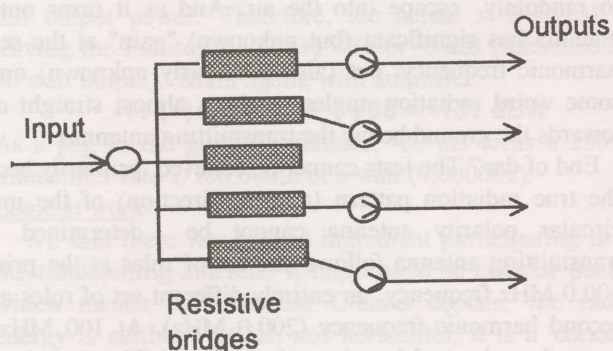
A 'diode' is a device used for a number of purposes in standard (radio and) TV applications; to convert 230V AC to DC (for example). Or to 'detect' (as in receive/demodulate) a radio or TV transmission. And to 'multiply' one frequency by some math factor (2x, 3x, etc.) to a new frequency.

A 'diode': Two (or more) dissimilar metals form a junction (come together). If the metals are of the 'right' (wrong, in this instance) mix, at the point where a strong signal appears (call

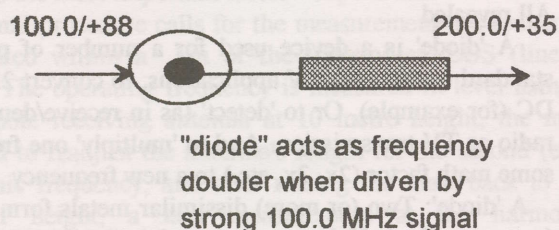
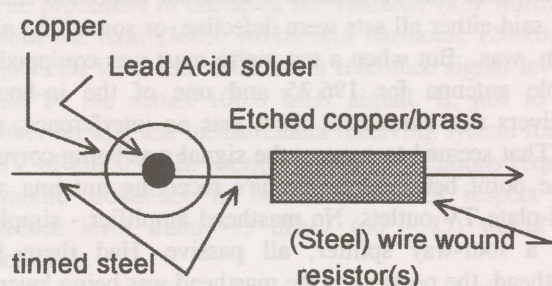




Inline FM traps come in several formats - metal housed is best choice. We found Antronic had best 75 ohm match and 88 - 108 MHz cancellation.



Dissimilar metals create a non-intended "diode" which when 'driven' by a strong signal turns into a frequency multiplier; 100 MHz 'in' and 100 + 200 'out'.



it 100.0 MHz), two signals come out - the original 100.0 MHz and a 'frequency doubled' 200.0 MHz. If you want a name for this, use 'rectification'.

Many older (and some versions still sold through DSE and other DIY outlets) signal splitters have non-shielded (not protected) circuitry circuit boards. On the board, component parts (resistors et al); a piece of copper coated board, hardware (some steel, some brass, some tinned) and solder. A diode is two (or more) dissimilar metals joined together. A brass + solder/lead + copper 'joint' was never intended by the circuit designer to be a 'diode' but with time and corrosion, a 'diode junction' has formed.

A 'frequency multiplier' diode allows the original frequency to pass through, and creates a new one: 100.0 + 200.0. This is actually happening inside the otherwise 'totally passive' (4 way) signal splitter. No, it is not supposed to happen and before several years of corrosion in a salt-laden seacoast atmosphere, it possibly did not act like a diode. But now it does.

As it happens, a 'frequency multiplier' diode is very sensitive to input levels. The easiest way to make a non-intended diode junction stop being a diode is to reduce the input signal level. The diode multiplier is almost like a switch - find a signal level for 100.0 MHz where the 200.0 doubling quits, and all interference immediately ceases. Is there a test here?

The FM band-stop filter

Any portion of any spectrum can be reduced in signal level by installing an in-line filter. The filter elements are like electronic sponges - by the circuit design, parts values and after production fine-tweaking by a technician, a portion of the spectrum is reduced in through-put signal level. Ideally, if the stop-band trap/filter is designed to attenuate say 88 - 108 MHz (the FM broadcast band), signals outside of that defined region will not be attenuated. In practice, signals close to the defined stop-band (say 80 or 120 MHz) will still be attenuated somewhat but in our intended use (reception in TV bands I and III) there will be little degradation.

A standard consumer grade of FM stop-band filter provides from 15 to 30 dB of attenuation between 88 and 108 MHz. Our signal level tests revealed 100.0 to be at +88 dBuV before the signal splitter.

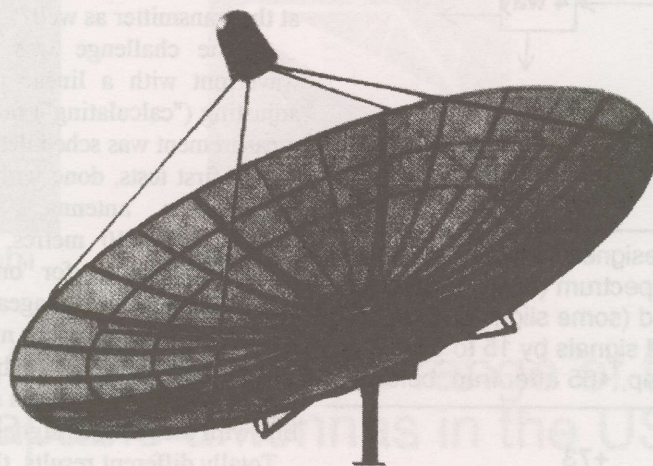
We cannot be certain at what 100.0 level our four-way splitter begins to act as a "rectifying signal doubler" but by installing the stop-band trap, we can reduce the 88 dBuV to perhaps 65 dBuV. Install the filter.

All interference gone

To verify our results, a temporary RG6 line was run from the FTA antenna directly to the lounge TV set - bypassing both the house cabling (9 years old) and the 4-way splitter (same age). Instant elimination of all interference - even with the radio station operating at the full authorised 250 watts.

Once satisfied the house system was, indeed, "rectifying" the strong, local, 100.0 signal, a FM stop-band signal was installed at the antenna with approximately two metres of original cable left ahead of the filter (back to the antenna) and the balance of the house system left alone. We did not replace the 4-way splitter (it is buried in an impossible to reach attic location) although certainly that could have been a choice. Happy days - after the stop-band is in place, all three TV sets are crisp and clean.

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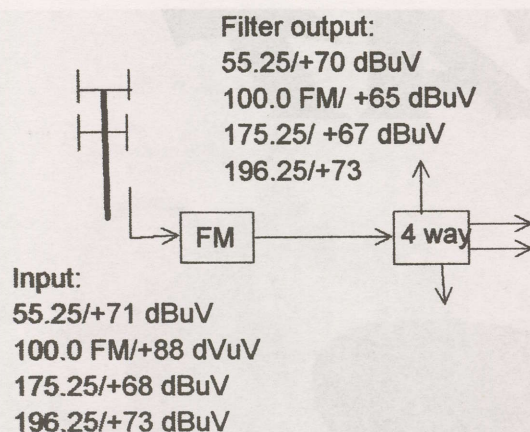
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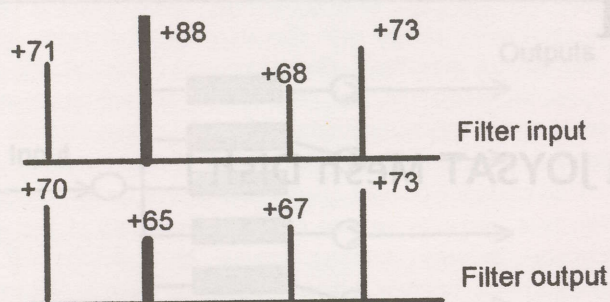
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FM 'stop-band' trap is designed to allow signals outside the FM broadcast spectrum (88 - 108 MHz) to pass essentially unimpeded (some slight loss noted) while attenuating the FM signals by 15 to 30 dB (depicted as +88 before trap, +65 after trap, below).



Repeating the transmitter test

The original interference was resolved, and although all of the early evidence strongly suggested the transmitter was at fault, in fact if it was, installing the 88 - 108 MHz stop-band filter would not have had any effect on the interference case. Why? Because reducing the 100.0 level to the diode-rectifying-splitter would in no way effect a 200.0 MHz signal if in fact there had been such a signal at the input to

200 MHz harmonic test at location of 100.0 FM transmitter; test antenna rises to 10 metres.



the splitter. By reducing the 100.0 input level, eliminating the TV set interference, we proved the case that the splitter was at fault (or far less likely, something very strange within the RG6 cable used in the system between the antenna and the input to the splitter).

Yet the original RFS test strongly hinted the second harmonic was not up to scratch. Could we have "diode rectification" at one location *and* excessive second harmonic at the transmitter as well?

The challenge was measuring a circular polarised wavefront with a linear polarised reception antenna; and adjusting ("calculating") the conversions. A second round of measurement was scheduled.

The first tests, done within a hundred metres of the 100.0 transmission antenna, and below (lower than) by approximately 10 metres, entered into the equation total unknowns (solving for 'one unknown' is practical, two or three becomes unmanageable). Two new locations were chosen for testing - each more than a kilometre distant, each within a few metres of being (with the 10 metre height measurement mast) within a metre or less of being straight in line with the radiated signal.

Totally different results, this time.

The second harmonic was so far down as to be barely discernible and at one location perhaps it was not identifiable (being below the noise floor of the analyser system). The official report reads, "...any second harmonic activity was less than -86 dBw."

Conclusions

In the presence of a strong transmission signal, a 'dissimilar passive connection' can become a frequency multiplying diode. The literature treats the subject in an abject manner, typically one short paragraph noting that items such as stock fences, galvanised roofing/siding, corroded outdoor lighting systems can develop this characteristic. Documented cases have one, two or more strong local transmissions 'mixing' within an accidental diode ('rectification') creating either harmonic frequency signals or 'sum' and 'difference' signals where in theory there should be none. A strong 100.0 MHz and a strong 175.25 'mixing' in a 'dissimilar connection' will generate 75.25 MHz (175.25 - 100.0), 275.25 (the sum of the two) as well as 200.0 and 350.50 all from the same corroded junction!

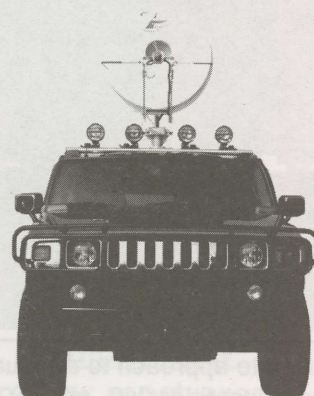
Experience shows that outdoor, weather susceptible, accidental diodes tend to be intermittent (only when it rains, or alternately, only when it is hot and dry - etc), making tracing to a source more difficult. One hallmark case involved metal siding on a barn in a wind prone area. The wind beating on the building caused the diode to form and break as the metal shifted position by a fraction of a mm. Consequently the signals generated by the diode connection came and went in a totally unpredictable, wind directed rate. And when there was no wind, the connection 'failed' - no interference generated. Signals so generated typically radiate over small areas, seldom exceeding 100 metres from the source.

In our case, everything stayed bottled up within the in-house cable + splitter distribution system. Perhaps the most important clue, and the one that should have been an 'alarm' when discovered during the first tests at the offended site, was the total absence of interference on a RFS provided test antenna. This was noted prior to the initial abortive attempts

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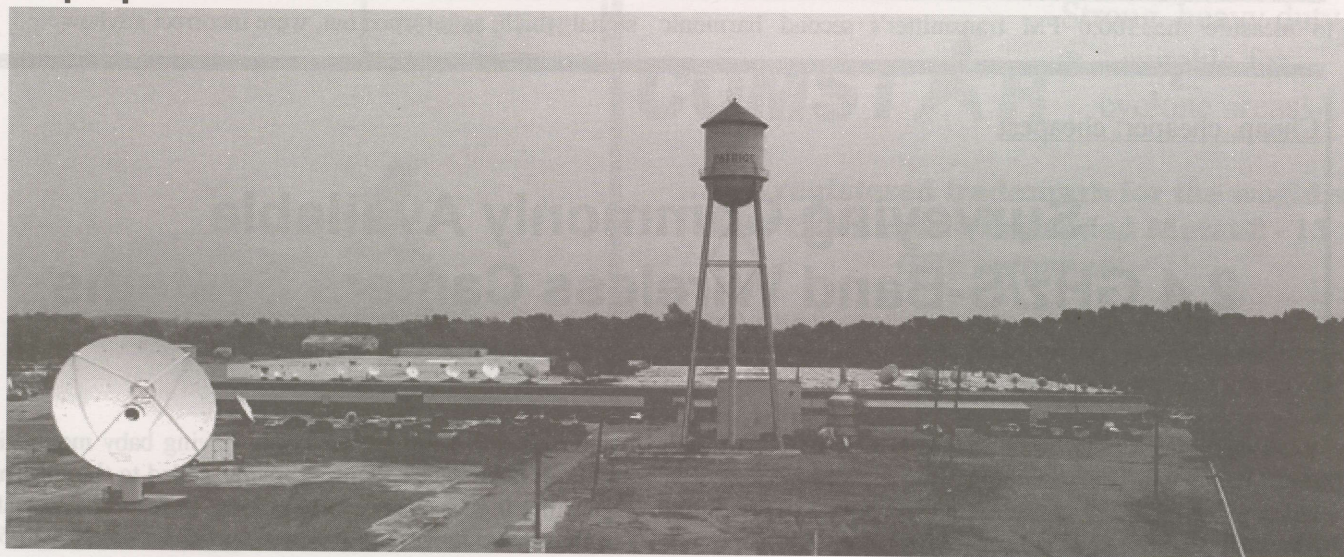
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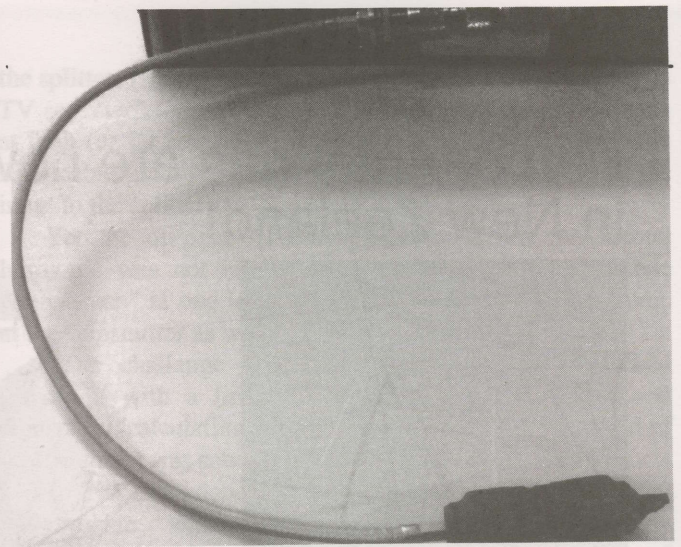
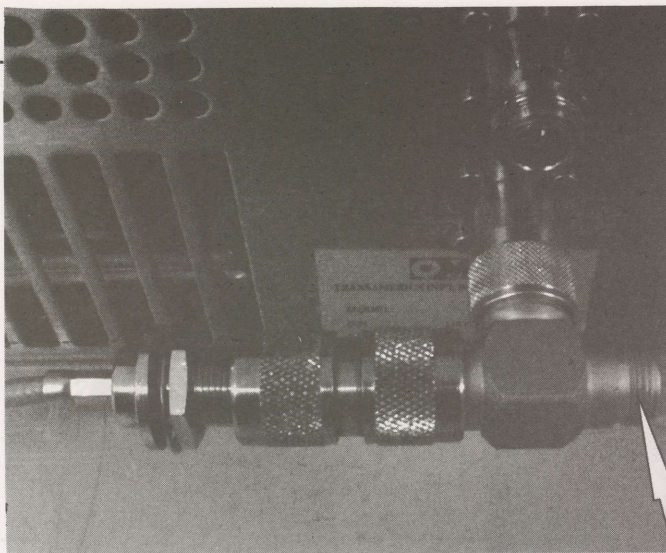
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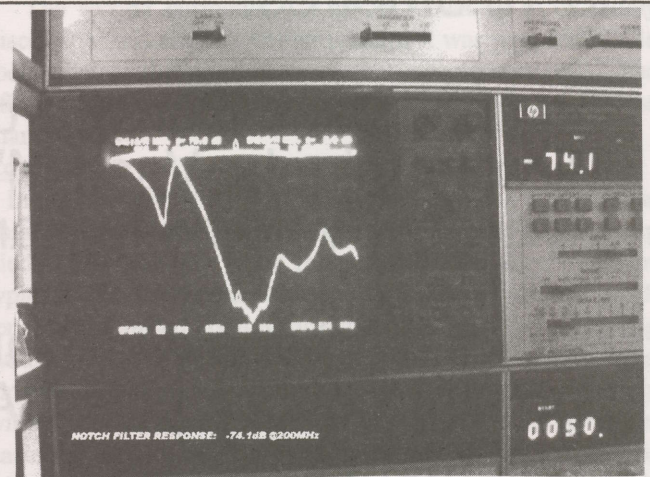
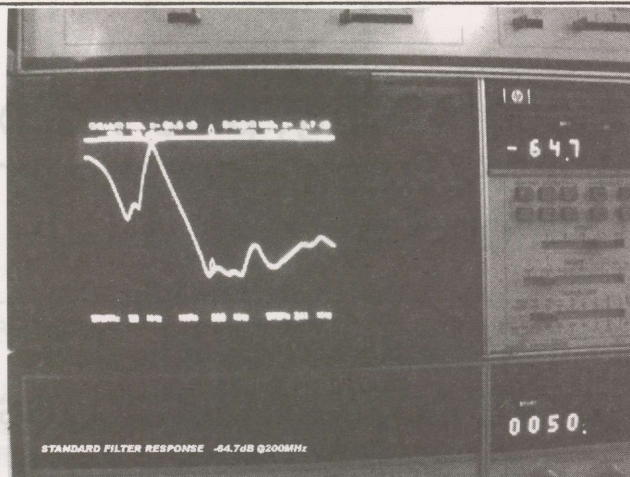
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Alternate approach to attenuating ('fine tuning') amplifier (or transmitter) second harmonic output. At the output of the transmitter (left, above) a coaxial transition splits the actual amplifier/transmitter output into a 'T'. One leg of the T goes to the actual transmitting antenna (right, above) while the other side of the T connects to a laboratory calibrated/adjusted quarter-wave length 'shorted stub' which is resonant at the second harmonic frequency (200 MHz). The stub 'dumps' the second harmonic content as shown below: Left, amplifier alone without stub shows -64.7 dB attenuation of 2nd harmonic while (right) after adding stub, attenuation increases to 74.1 dB. Low in cost, effective.



to measure the 100.0 FM transmitter's second harmonic signal which, as it turned out, were incorrect anyhow.

Cheap, cheaper, cheapest

Surveying Commonly Available 2.4 GHz/S-Band Wireless Camera Systems

Prices on complete send and receive 2.4 GHz wireless (even colour) surveillance/monitoring camera systems have fallen to new lows at consumer outlets such as Dick Smith Electronics/DSE. And with sub \$200, even \$100, pricing, the wireless systems have become the latest fast selling 'fad' with a marketplace increasingly concerned about home security. Cameras are available with colour, built-in sound (microphone pickup), and IR (infrared) enhancement for night-time operation (most consumer cameras revert to black and white for night-time operation). In an already

overcrowded 2.4 license-free band, having baby monitoring and front door "who's there?" cameras added to the spectrum is pushing it ever closer to total chaos. In response, portable telephones are moving to the next up license-free band (5.X GHz) and it is likely wireless equipment including cameras will follow. Where the present 'CB mentality' of 2.4 GHz will likely repeat so that within two-three years, 5 gigs will be just as crowded as 2.4 is today. Clearly, we "devour our young" and then ourselves with each new consumer gadget that requires spectrum space.



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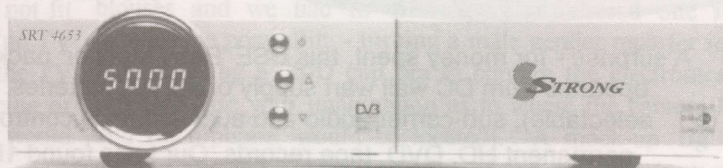
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LNBS
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POWERFUL FEATURES
&
PERFORMANCE

SRT 4650

SRT 4658



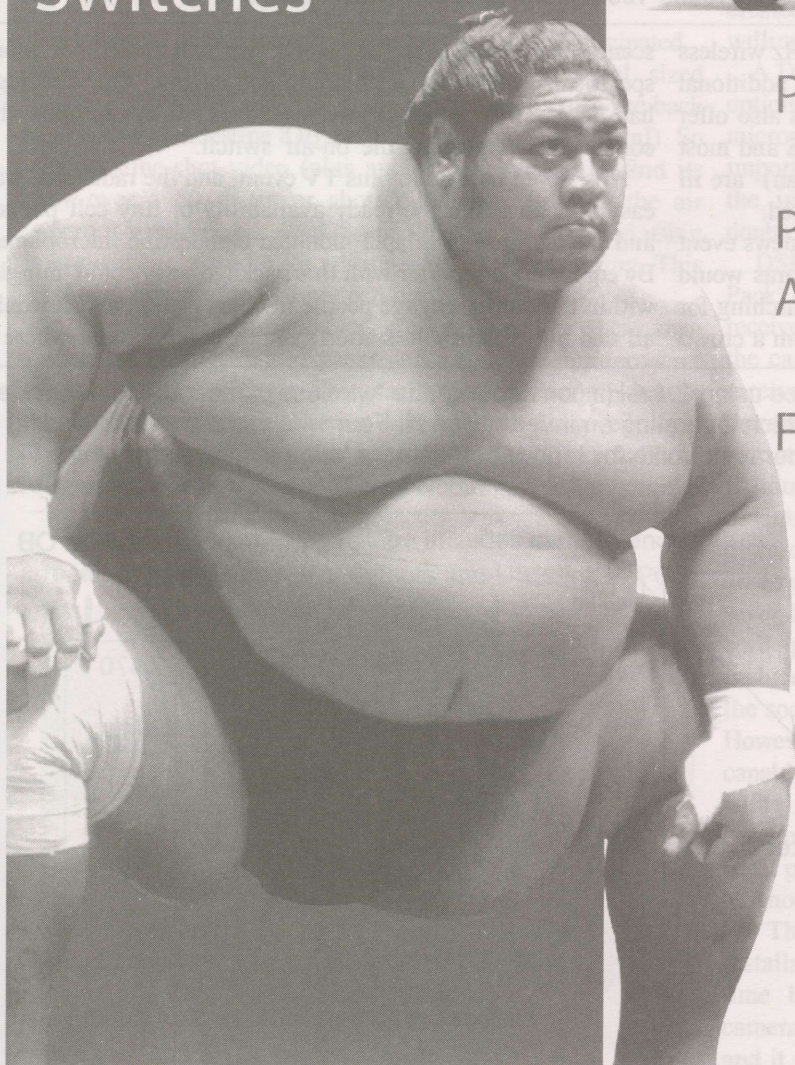
PAN & ZOOM LIVE TV

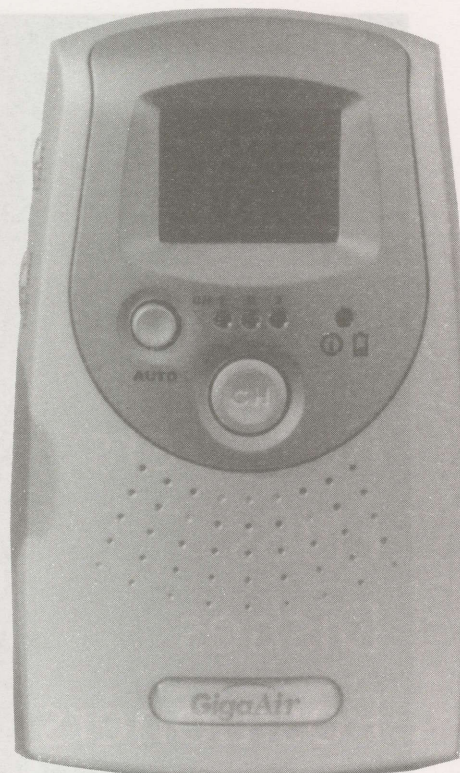
PREVIEW 9 CHANNELS
AT ONCE

FTA / CONAX CAS7 / CI

**NEED
COMPONENT VIDEO?**

STRONG





Of the multiple offerings from Dick Smith Electronics / DSE, this package seems least likely to be 'serious'. Looks can be deceiving and by associating it with 'baby monitoring' DSE may have done their sales curve a disservice.

There are two self contained portions; the colour camera + 2.4 GHz transmitter, and, the 2.4 GHz receiver. For under (NZ) \$300 with AC supplies.

A surprise - for money spent, this DSE 'Baby Monitor' package produces excellent results. Model 'GigaAir 4561' operates from DC wall wart supply or 4 x AA batteries. No external antenna - 3 operating channels (user selectable), sub-carrier audio and audio-squelch control activated by sender end sounds; A-V outputs for permanent HD, DVD, tape records. Our tests found 100m claim is conservative if LOS (line of sight).

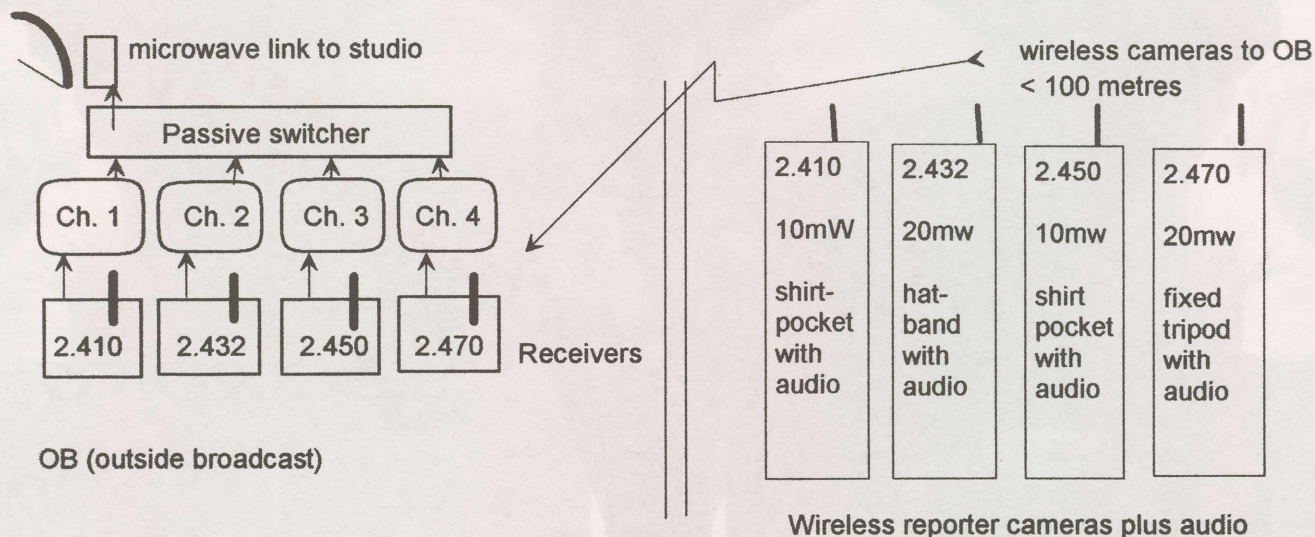
Presently, DSE offers four to five different 2.4 GHz wireless camera 'systems' with optional extras such as additional cameras (alone - outside of a 'pack'). Other outlets also offer wireless cameras but none are as extensive as DSE and most consumer electronic stores (such as Harvey Norman) are ill equipped, technically, to deal with the issues involved.

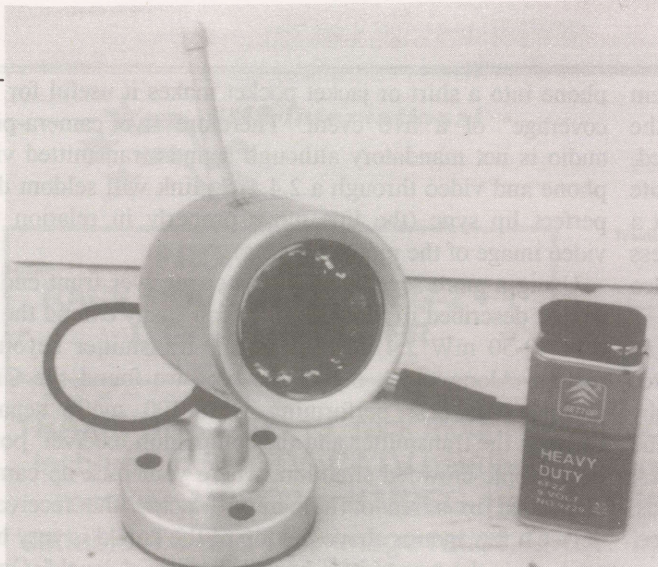
Some background. To cover an anticipated field news event where no handheld or shoulder mounted TV cameras would be allowed (only print media allowed), we were searching for a way to provide video (plus companion audio) from a crowd

scene. The crowd was 'the story', we anticipated, or more specifically what they were doing and saying. Our coverage had to be live although we would carefully monitor the content before pushing the 'on-air' switch.

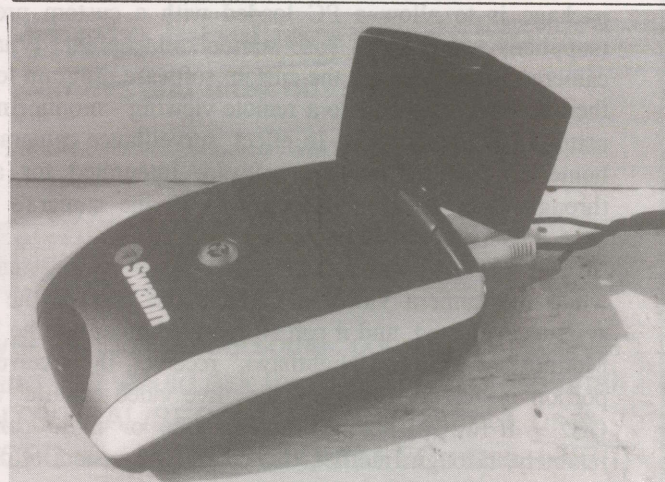
This would be a radio plus TV event, and the radio side was easy enough given the ready availability of tiny cell phones and the addition of a lapel mounted clandestine microphone. By equipping a reporter with this package, they could 'mingle' within the crowd, engage people in conversation and it would all end up in the radio station's on-air control room where a

Simplified block diagram of coverage sequence using 2.4 GHz consumer grade "wireless cameras." OB (Outside Broadcast [van]) was in rear of hatchback vehicle operating on inverter power. Four wireless cameras including 2.470 permanent studio grade camera and mike for reporter on-camera 'dumps' to system.





Swann DSE L5941 is tiny enough, camera is adequate but audio pickup is totally unacceptable ("could you lean closer and speak into my pocket?").



Companion receiver uses flat-plate 2.4 GHz antenna, provides loop-to A + V outputs for monitor or recorder. Receiver sensitivity is unacceptable.

moderator could switch 'in' and 'out' of the cell phone coverage and switch between reporters each using separate cell phones patched to the station's audio board.

TV was a different challenge. Anything that would not fit into breast shirt pocket or on a belt would violate the 'no TV camera' dictum. And there was no reasonable way for the TV equipped reporter to monitor what the camera was seeing or what the companion microphone was picking up so it would be 'shooting blind' exercise.

However, approximately 50 metres from the anticipated 'news zone' we would be able to park a normal sized passenger vehicle, and with some modifications turn the back seat into a clandestine 'OB' (as in outside broadcast [van]). So clandestine-shot video (plus audio) only needed to find its way over a 50 metre or shorter distance, through the air where it would be received by the OB and then relayed using microwave to a studio for editing, air use or recording. This is the background to that happening.

Small CCD surveillance cameras require their own (sizeable) 12V DC power packs and a companion microwave transmitter plus antenna. This was far too much equipment to 'build into' a reporter's clothing - although we did give it a go. Turning a 50 kg thin person into a bulked-up 70 kg balloon, disguising electronics inside heavy clothing, was not going to

work when the temperature was likely to be 30C and our 'balloon reporter' would stand out like an Eskimo on a nudist beach.

The dress of the day would be short sleeved shirts or blouses and we had to 'fit in'. That offered one more clandestine possibility - turning a male gender reporter into a female, using a 38-D cup bra to contain the electronics we required (use your imagination as to where the camera lens, and microphone, would be located). A mock-up 'rig' was created but few (none, actually) of the reporter crew were willing to sample the disguise. Back to plan 'C'. (1)

A Dick Smith web site search revealed a number of camera options, all 2.4 GHz supported. Some had built-in microphone ability, some did not. Getting the 'image' was important but lacking reasonable quality companion sound, the images would be quite worthless. Perhaps we could double the cell phone use for TV audio?

DSE's (Swann brand; Cat # L5941) 'Night Hawk Camera Pack' includes a pair of cameras and a single receiver. The receiver requires a separate (video + audio) monitor although the camera's transmissions can be patched directly from the receiver to a (microwave) link at baseband without additional equipment. The camera comes on a 'stand' designed to allow mounting on a wall, ceiling or other location. A short (33mm) quarter-wave vertical antenna is permanently mounted on top of the case. The stand is easily removed and discarded, leaving you to disguise the remaining camera and antenna in a shirt pocket. Power? A 9V battery runs it for several hours. Audio? Well, that is a challenge. The 200mm cord permanently wired into the camera + transmitter includes a very tiny, *and ineffective*, microphone enclosed in the socket that joins the wire to an external 9V battery pack. However, the camera includes built-in IR generation and it is capable of switching from CMOS full colour to black and white in dimly lit coverage situations. There was promise here, even if the camera/transmitter is a bit on the 'bulgy' side (it fit perfectly into a 38-D bra cup however).

Another DSE option is their XH3369 Wireless PC Camera kit. This is a segment of a serious video camera surveillance installation, designed to work with a PC for recording live or time lapse images. Audio is not included. The wireless camera is CMOS colour + transmitter, 33mm whip antenna, and it will operate from 6V dc. The designer intent with this

XH3369 PC-oriented package includes camera and receiver which has A + V outputs and USB link to PC.



package is to allow a PC loaded with a custom program (supplied) to act as a 'base station' relay point. What the camera(s) sees, through the custom software program loaded, then becomes available to a remote viewing - monitoring site using TCP/IP (network). In effect, surveillance cameras at a home or business can be software integrated for access through Internet. Our interest was in the camera's video service (remember - no audio here).

The XH3369 was not designed for our requirement and while the camera video is perhaps the best of the three systems evaluated, and it can be received on either the "Baby Monitor" or "Swann Nighthawk" receiver, the receiver end portion is overkill for simplistic "live video capture" at 2.4 GHz. If we wished to monitor one or more cameras, remotely, through Internet, this could be a system of choice, however.

Functions

Recall our goal - live camera (and companion audio) from a DC operated package which could be disguised on a person so that short of a police pat-down the equipment is not apparent. Some (not many) cell phones offer excellent audio sensitivity (models from Samsung are an example of this; specify remote pick-up) and once a hook-up is established, dropping the cell

phone into a shirt or jacket pocket makes it useful for "news coverage" of a live event. Therefore live camera-pick-up audio is not mandatory although sounds transmitted via cell phone and video through a 2.4 GHz link will seldom display perfect lip sync (the lips move properly in relation to the video image of the mouth moving).

Using a more sensitive 2.4 master-receiver front end (such as that described in SF#139; p. 7) can easily extend the range of a 10-50 mW 2.4 GHz camera + transmitter beyond 500 metres. Alone, stock out of the box, we found the GigaAir package the best performing with 100 metre separation between the transmitter and the companion receiver possible. In a people-crowded situation, where your pick-up camera is embedded in a sea of humanity, placing the receiver end device a few metres above the top of the crowd is very helpful even with the transmitter buried "at crowd level." Only the top of the GigaAir (or lens for other models) camera needs to "show" (you cannot 'shoot image video' through a piece of cloth!).

One DSE model we did not test at this time is the L5878, about the size (and shape) of a ball point pen. Now that is the ultimate in clandestine - if it works!

Aftermath

Optus Aurora Dumps Thousands of cards

So Optus had a busy month. First they modify the Aurora data stream effectively knocking out thousands (some say over ten thousand) STBs which do not process their new authorisation stream, and then B1 goes on a surprise walk-about. And there is more, according to reports - a number of 'sharing devices' in use by those who would use one authorised Foxtel or Aurora card to activate two or more receivers also quit working. For an encore, Optus would disconnect all trouble phone lines and leave users adrift in a sea of uncertainty.

SatFACTS for February (#139) warned the Aurora card exchange was coming; most who know about such things believed there would be an updated country code or master key change; neither having been revisited by Optus for approximately 5 years. In that non-change interim, a number of innovations appeared in the marketplace such as cardless receivers requiring manual entry of magic numbers (such as '6969') to automatically initialise the start-up of receivers factory programmed with Aurora access codes. A number of Korean firms, and more recently Chinese manufacturers, had adopted this Irdeto 1 format access routine essentially turning CA signals into FTA services. This allowed folks with the new receivers to access services such as ABC, SBS plus the regional services including Central 7, GWN, WIN and Imparja. And virtually everything else within the Aurora bouquet including radio. This 'all for one - one for all' software approach made a mockery of the original Optus plan to regionalise broadcasters (such as C7) to only a portion of the (Australian) region - essentially, limiting reception to locations where individuals were entitled to the specific services. WIN, Central 7, Imparja and GWN were of course never intended to be continent-wide TV channels. If any of the Optus innovations had been restricted to only the

cardless and gold card operated receivers, concerns would be few. The users logically knew they were subverting 'the system' and for whatever length of time they have been using the after market products, they have been enjoying access to television (and radio) to which by regulation they were not entitled. Unfortunately, Optus compounded the problem by somehow knocking out legitimate cards as well, those which the users claim were purchased through authorised card distributors and operating in authorised receivers. These, then, have become one-problem-at-a-time to resolve, leading to a total jamming of the Optus help lines (tel 1300 556135; fax 1300555221; Optus even admits their fax machine broke down!). Optus at that point modified its (FTA) 12.407Vt 'Tuning Channel' announcement advising viewers to go to card distributors so-listed (and as of 4 April, Optus had run out of replacement cards, acknowledging requests for 17,000 new cards!!!). Most of the firms listed did not appreciate Optus abandoning even the pretext of helping people through the mess and leaving the problem at a level where solutions were unlikely to be found. These distributors will be less pleased to learn that according to Federal Member of Parliament, Michael Ferguson, in answer to a query from Western Video on April 3 (see p. 22), "Optus presently has only one person allocated to take phone calls (relating to Aurora and other TV services) for ALL of Australia." SF checked with Optus Corp affairs and was told, "We never expected this;" right on. So where was 'Duty of Care' here? The point man, one Neil Davis, was actually on leave (!) the day the switch happened and the infamous Ed Guz has disappeared behind a lead wall. Optus (Aurora) - our new candidate for the "worst company in Australia" (sorry Jaycar-p.4, SF#138; try again!). Solution? Reverse what was done, and start over - a message to Mr Guz.

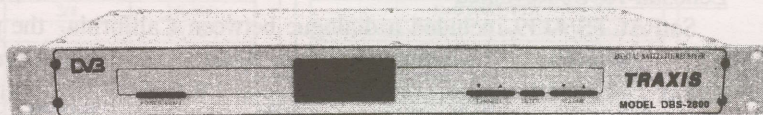


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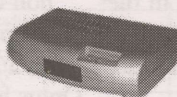
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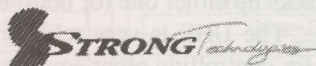
2.3M MESH DISH



C BAND LNB



POSITIONER



ACTUATOR



FTA RECEIVER



2 X CI CAM RECEIVER

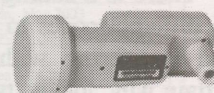


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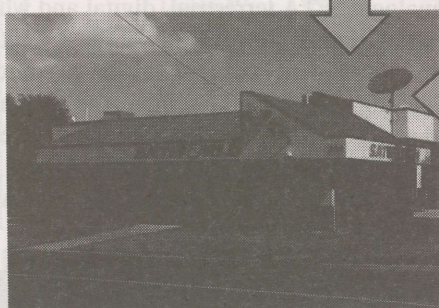
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TECHNICAL TOPIX

Echostar RCUs Revisited

SatFACTS #139 included a dialogue between California TVRO consultant Tim Alderman and TV2Me inventor Kenny Schaffer, concerning the apparent lack of compatibility between Echostar brand RCU (remote control units) and everything else on the planet that uses RCUs. Alderman lamented the expensive (US\$50) replacement cost of Echostar RCUs and Echostar IRD failure to function with any known 'universal' RCU replacement device. Schaffer had found it impossible to interface his TV2Me + TiVO packages with Echostar 'DISH' clients because of the 'uniqueness' of the Echostar RCU code. And there are other Echostar challenges, such as the inability to select ahead beyond 4 hours for recording on an external device (such as TiVO - anything after four hours produces a 'Dish Screensaver' display and that is what the user ends up recording.

SatFACTS contacted Bob Luly, one of the 'grand old men' of home satellite, who lives in Colorado and serves as a 'Senior Consultant' to Dish's founder Charlie Ergen. If Luly's name seems familiar (as it will, Ian), he created a number of first-ever inventions during the C-band days of the 80s including a 40 pound transportable mylar film base 12' satellite antenna. But to the present:

Luly: "The Echostar remotes come in several flavors. The best ones have both a UHF transmitter (now PSK) AND an IR with two LEDs. Normally they both transmit at the same time and the receiver picks up either one (or both) to make it (slightly) more reliable. The UHF is very reliable but they need the (learning) IR for controlling other equipment in the same room and also for lower cost satellite receivers without UHF. Both the UHF and IR are really powerful, as IRs go, and require 4 x AA batteries.

"When you push a button, normally both IR and UHF transmit and either one will control the receiver. There is one case, in some receivers with two tuners, that allows you to send one of the tuners demodulated and then remodulated to another TV in another room, via a (VHF USA) channel 3/4 modulator through a cable. That second TV's satellite viewing is controlled via UHF and the TV in the main viewing area is controlled via IR; one satellite receiver 2 different viewing areas.

"There is a coding feature on the remotes that allows for 16 different codes to keep one UHF from penetrating walls and interfering with a neighbor's receiver. I cannot be certain why, for the two tuner plan, they chose to use one IR and one UHF but the package arrives with two remotes although one is IR only.

"On the matter of 'cloning' the Echo IR remote, I know of no reason why it cannot be cloned (the PSK modulation being perhaps a factor). I am not aware that anyone makes a universal UHF remote."

Fed up with Optus

"Since Optus changed the Aurora card (Master Key) I have received 186 phone calls from viewers with no reception and I cover only a small piece of Tasmania. Ninety % are probably from people using cardless boxes or Gold

Cards looking for someone (anyone!) to come along and fix the problem. It all takes up a hell of a lot of valuable time. Optus has very cleverly told viewers on their information channel, 'Contact your supplier'. All of a sudden I began getting calls from people who 'think' I am their supplier simply because we are listed in the yellow pages under satellite. One guy who rang me today is travelling around Tasmania in his motorhome and he comes from Western Australia - insisting that I had supplied him his equipment; no, I have never dealt with this person before in my life. I have tried and tried to get through to the listed Optus phone number (1300 556135) and guess what - nobody answers it. Optus seems to be permanently 'out to lunch'!"

Brian Watson, Western Satellite, Tasmania

Editor's response: Although this remains early days, complicated by the 14 hour failure of B1 shortly after the Aurora card changes, it appears that cards starting with 0003 are especially vulnerable while there are fewer problems with those starting with 0002. One reader could not make his (0002) card function in an Optus approved Aurora receiver, put it into a Nokia equipped with DVB2000 and in two minutes the card was working - and could be transferred back to the 'official' receiver, working. Cards may restart sooner if the IRD is tuned to C1, 12.407Vt (30.000, 2/3) and SBS SE, perhaps as long as overnight. Others report gold cards still running, and there is a April 4th report that gold card reworkers have been successful in reloading versions of this card with 'new numbers'. And still others report success in copying recently granted, non-effected 'original' cards to gold cards that had quit. Someplace in all of this there is either complete fabrication (on a large scale judging from the number of reports), or, Optus has put thousands of people through a needless period of frustration and stress all in the name of 'protecting' their good name in encryption technology. Which, if the reports are true, is not so good after all. So what comes next - Irdeeto 2? It will be the next bridge to cross for pirates.

Issue # 140 Front Cover

"I thought the enclosed photo might amuse you - it illustrates the 'switch box' I have built to my various satellite receivers to look at the 14 feeds (combinations with different polarities included) via DiSEqC switching; not a manual switch in sight!"

Roger Woodward, NSW

Editor's response: Of course Roger's significant interest and involvement in satellite TV created the *need* for this 'monster switching system' but we should not dismiss it as an example of a hobby-gone-mad. By the time we have 2, 3 or 4

TV sets in a typical home, with incoming satellite, FTA terrestrial analogue, FTA terrestrial digital and who knows - CA terrestrial digital, allowing any of the TV sets in the home to gain independent access to any of the sources could end up looking very much like this! And then add in broadband and TiVO-like delayed viewing devices and - well, you will get the picture, but not easily. Roger offers to diagram his system and create an article for SatFACTS "if there is sufficient interest." *Is there?*

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 APRIL, 2006

Bird	Service	RF/IF &Polarity	# Program Channels	FEC	Msym
Thom3/78.5	SkyChAust	3695/1455H	up to 3	3/4	5(,000)
	ANT Greece	3672/1478H	1 TV	3/4	13(,333)
	TARBS ME mux	3640/1510H	12TV, 12 radio	2/3	28(,066)
	Ch Nepal	3626/1524V	1	3/4	15(,556)
	Mahar mux	3600/1550H	11TV, 1 rad	3/4	26(,667)
	RR Sat mux	3551/1600H	8TV,10 radio	3/4	13(,333)
	TVK Cambodia	3448/1702H	1TV	1/2	6(,312)
	TARBS/Th5	3480/1670H	12 TV+radio	2/3	26(,667)
	Thal Global	3425/1725V	up to 7?	2/3	27(,500)
	ETV mux	4005/1145V	6+ TV	3/4	27(,000)
InSat 2E/83	Hyd Dig 2E	3910/1240V	1	3/4	5(,000)
	Kairali TV	3699/1451V	1	3/4	3(,184)
	Indian mux	3643/1507V	3	3/4	19(,531)
	Sky Bangla	3430/1720V	1TV	3/4	6(,000)
	Ant Pac (Greek)	11.104H-Australia	1 TV	3/4	2(,800)
NSS6/95E	Guangdong TV	4075/1075H	1TV + radio	3/4	6(,000)
	Euro Bouqt	4000/1150H	5TV, 19 radio	3/4	28(,125)
	SatLink	3960/1190H	3TV	3/4	27(,500)
	Reuters News	3905/1245H	1TV	3/4	4(,000)
	WorldNet	3880/1270H	4+/18radio	1/2	20(,400)
As2/100.5E	APTN Asia	3799/1351H	1	3/4	5(,632)
	Reuters/Sing.	3775/1375H	1	3/4	5(,631)
	APTN Asia#2	3705/1445H	1	5/6	4(,166)
	Macau MUX	4148/1002V	5TV	3/4	11(,850)
	Dubai MUX	4020/1430V	4+, radio	3/4	27(,500)
	Russian/Israel	3832/1318V	up to 4 video	3/4	7(,271)
	Trace TV	3792/1358V	1	3/4	2(,400)
	BYU-TV	3767/1383V	1 + 20 audio	1/2	6(,530)
	3-ch miniMUX	3752/1398V	up to 3	3/4	5(,640)
	Saudi TV1	3660/1490V	7+/tests	3/4	27(,500)
Express2/103E	Various-tests	3675/1475R	2	3/4	4(,340)
	CETV digital	3680/1470H	1+ TV	3/4	26(,670)
	Zee bouquet	3700/1450V	10TV	3/4	27(,500)
	Ch News Asia	3706/1444H	1TV (+)	3/4	6(,000)
	Azio TV	3716/1434H	1TV (+)	3/4	7(,000)
As3S/105.5E	BT World	3725/1425V	1TV	3/4	4(,450)
	TVB 8	3729/1421H	1TV	3/4	13(,650)
	Zee Movies	3732/1418V	3TV	3/4	6(,500)
	TV One	3739/1411V	1TV	3/4	2(,8934)
	SAB TV	3743/2407V	1TV	3/4	3(,300)
	Fashion TV	3747/1403V	1TV	3/4	2(,625)
	AAJ-TV	3750/1400V	1TV	3/4	2(,820)
	Airrang TV	3755/1395V	1	7/8	4(,418)
	Now TV +	3760/1390H	up to 10TV	7/8	26(,000)
	Star TV	3780/1370V	7(+)/TV	3/4	28(,100)
	GXTV	3806/1344V	1TV + 3 radio	3/4	4(,420)
	Shaanxi TV	3813/1337V	1TV + 2 radio	3/4	4(,420)
	Anhui TV	3820/1330V	1TV + 2 radio	3/4	4(,420)
	Jiangsu TV	3827/1330V	1TV + 2 radio	3/4	4(,420)
	HLITV	3834/1316V	1TV	3/4	4(,420)
	Star TV	3840/1310H	7(+)/TV	7/8	26(,850)
	Star TV	3860/1290V	5(+)/TV	3/4	27(,500)
	Arabsat MUX	3880/1270H	10+TV, 14Radio	3/4	27(,500)
	Dragon TV	3886/1264V	1 TV	3/4	4(,800)
	Shandong	3895/1255V	1TV + 6 radio	3/4	6(,813)
	CCTV1	3904/1246V	1TV, 1 radio	7/8	4(,420)
	Jilin TV	3914/1236V	1TV + 2 radio	3/4	4(,420)
	Star TV	3920/1230H	4+ TV	7/8	26(,850)
	CNNI	3960/1190H	8TV, 1 radio	3/4	27(,500)
	Star TV	3980/1170V	6+TV	3/4	28(,100)
	Star TV	4000/1150H	8(+)/TV	7/8	26(,850)
	Sahara digital	4020/1130V	8TV, 1 radio	3/4	27(,250)
	Hubei TV	4035/1115H	1TV + 2 radio	3/4	4(,420)
	Tianjin TV	4046/1104V	1TV + 2 radio	3/4	5(,950)
	Sichuan TV	4051/1099H	1TV + 1 radio	3/4	4(,420)
	Qinghai TV	4067/1083H	1TV + 2 radio	3/4	4(,420)
	Hunan TV	4082/1068H	1TV + 1 radio	3/4	4(,420)
	Fashion/HK-Asia	4088/1062H	1TV	3/4	2(,626)
	Pakistani TV	4091/1059V	4TV, 1 radio	3/4	13(,333)
	Sun TV	4095/1055H	1	3/4	5(,554)
	PTV National	4106//1044V	1TV, 1 radio	3/4	3(,333)
	TVB8 Mux	4111/1040H	4TV	3/4	13(,650)
	Indus News	4115/1035V	1	3/4	3(,331)
	CCTV bqt	4129/1021H	4 TV, 4 radio	3/4	13(,240)
	Zee Bqt #2	4140/1010V	8(+)/TV	3/4	27(,500)
	Henan TV	4166/984V	1TV + 8 radio	3/4	4(,420)
	Fujian TV	4180/970V	1TV + 2 radio	3/4	4(,420)
	Jiangxi TV	4187/963V	1TV + 2 radio	3/4	4(,420)
	Liaoning TV	4194/956V	1TV + 2 radio	3/4	4(,420)
	Cak1/107.5	Indovision (S-band) 2.535, 2.565, 2.595, 2.625, 2.655	33(+)/TV	7/8	20(,000)
T Kom/108E	IndoBqt	3460/1690H	up to 6	3/4	28(,000)
	TPI	4185/965V	1	3/4	6(,700)
	Anteve	4144/1006V	1	3/4	6(,510)
	Kabelvision Mux	4080/1070H	7+ TV	7/8	28(,125)
	Indostar	4074/1076V	1	3/4	6(,500)
C2M/113E	Satelindo	3935/1215H	1	3/4	6(,700)
	Bali TV	3926/1224H	1	3/4	4(,208)
	Indo MUX	3880/1270H	3+ TV	7/8	28(,121)

Receivers and Errata

CA (#1, 3); FTA audio #2
Late July 04: room for more (FTA)
CA + 23FTA(AITV, IRB3, Visjon Norge,Pakistan)
New 03/03; FTA
Thai + Indian services; FTA inc. Vibe TV, Sindh TV
3TV, Sradio inc. Hellas TV Greece FTA
FTA
3FTA: TV5, VTV4, ATN Bangla
FTA (reaches SE Australia)
Several ETV now here; wide beam
SCPC, OK E. Aust. wide beam
SCPC, OK E. Aust wide beam
corrections 12/02
New - November 2002
Now CA; was 11.083H
July 04: FTA
FTA TV + radio; Russia,Port,Spain, Italy/Euro Bqr
Real Madrid (V769, A770) English FTA
Was 3923H; sometimes FTA
FTA; multiple audio services V2360, A2320
Sometimes FTA; also 3895Vt
FTA & CA
FTA and CA - NASA reports included
5 chs TV, FTA, some tests
FTA ; Dubai Sports Ch some English, soccer-
Two Israel, two Russian (REN-TV)
new here Dec 2004; Euro-French music videos
Increased coverage; great variety audio chs(03-05)
Sun-TV, Surya TV, KTV (FTA)
FTA MCPC; Yemen, MBC EUROsport tests
Now loaded from 96.5E; svrl below 3900 all RHC
replaces analogue same freq; V33, A32
Now SECA 2 CA (10-04); Radio Aust. Eng. A2011
English + V1160, A1120; 525, 625 versions
Was parallel to 3640Hz analogue (now gone)
Conax CA, all Hindi films
Also reported 3.333, ¼ October 2005
SAB may no longer here here; moved to NSS-6?
new frequency October 2005
New April 2005; English, urdu
FTA SCPC; New PIDs V3601, A3606 June 2003
CA + FTA; DW, TV5 here now (late 2005)
NDS CA (Pace DVS211, Zenith)
Guangxi TV; was As2
Was As2
Was As2
Was As2
Was As2; HeiLong
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
New April 2004: link to Optus B3 Globecast
Shanghai
Apparently Mongolia
Star Sports Asia (+), FTA NTSC; V514, A670 (10-04)
PowVu CA; new SR Apr 29; CNN radio FTA
NDS CA; Star News India FTA VPID 514, APID 648
NDS CA w/ 4(Chinese) FTA
New Sr September 2004
Was As2
new December 2004
Was As2
Was As2
Was As2
New July 2005
new Sr, channels, Nov 2003
"History Channel" - SCPC, some English
MATV Ch Movies now Irdeeto 1
Hindi (+ "Plus"); day parts
moved from 4115
Now SECA 2 CA (10-04); 1 occ. FTA (varies)
Was As2
Was As2
Was As2
Was As2
NDS CA using RCA/Thomson,
Pace IRDs; 2.535 has 2 FTA
also 3586H/17.500, 3496H/19.615
FTA SCPC; NT/NC only
change from 4055V; FTA SCPC
also try 3500H, 27.000, 3/4; strong NZ
FTA (new 06-03); V2201, A2202
test card - only - reported
FTA, may not be active full time
FTA - Sr changes 01/03; errata

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
	Brunel/Sing	3733/1417H	1TV	3/4	6(,000)
	SCTV	3726/1424V	1TV	3/4	6(,620)
	RCTI	3473/1677H	2	3/4	8(,000)
As4/122E	CCTV internal	4100/1050V	6	3/4	27(,500)
Jc3/128	Miracle Net	3996/1154V	3 up to 6	5/6	22(,000)
	Asian bqt	3960/1190V	up to 8	7/8	30(,000)
Ap6/134E	Multiple	4140/1010V	up to 8	7/8	27(,500)
Ti8/138	Tests	3460/1690V	8	3/4	30(,000)
Am3/140	STS+	3731/1419R	1	3/4	3(,200)
Jc2A 154	BYU-TV	3915/1245V	1+ 20 languages	3/4	4(,166) (?)
MeasSs2	Astro Mux	11.602H	up to 17TV	3/4	41(,500)
	VTV MUX	11.522V	3 TV	3/4	9(,766)
R3/152	AuroraBiz	12.407V	4 TV, 10 radio	2/3	30(,000)
	UBI/tests	12.425V	up to 13 TV + radio	3/4	22(,500)
	Globecast 2	12.525V	13 TV, 8 radio	2/3	30(,000)
	Globecast (feeds)	12.550-.555V	1TV	3/4 & 2/3	6(,110/670)
	Globecast	12.564V/T13	2+ TV	2/3	30(,000)
	UBI/tests	12.613H/T14L	11+TV	3/4	22(,500)
	UBI/tests	12.640H/T14U	11+TV	3/4	22(,500)
	Globecast 1	12.658V/T7	14TV, 15 radio	2/3	30(,000)
	UBI/tests	12.674H/T15L	11+TV	3/4	22(,500)
	UBI/tests	12.701H/T15U	11+TV	3/4	22(,500)
	WA ABC	12.702V	1 TV, 1 radio	7/8	14(,288)
	WA SBS	12.720V	4TV, 2 radio	5/6	12(,600)
	WA GWN/WIN	12.738V	2TV	7/8	14(,295)
C1/156E	Internet tests	12.288V/T1L	no regular TV	1/2 - ?	28(,650) (?)
	Aurora	12.324V/T1U			
	Pay TV	12.365V/T2	11TV, 2 radio	3/4	27(,800)
	Aurora Home	12.407V/T3	5 TV, 13 radio	2/3	30(,000)
	Pay-TV	12.447V/T4	5TV, 4 data	3/4	27(,800)
	Pay TV	12.487V/T5	3+ TV, data	3/4	27(,800)
	Aurora 2	12.527V/T6	7TV, 20 radio	3/4	30(,000)
	Pay-TV	12.567V/T7	10 TV	3/4	27(,800)
	Pay-TV	12.607V/T8	10 TV	3/4	27(,800)
	Pay-TV	12.647V/T9	10 TV	3/4	27(,800)
	Pay-TV	12.692V/T10L	6TV, 27 radio	1/2	28(,650)
	Aurora MUX	12.728V/T10U	4TV, 17 radio	1/2	24(,450)
	Austar	12.305H/T11	6TV, 24 data	3/4	30(,000)
	Pay-TV	12.358H/T12	10 TV	3/4	27(,800)
	Pay-TV	12.398H/T13	10 TV	3/4	27(,800)
	Pay-TV	12.438H/T14	6TV, 3 data	3/4	27(,800)
	Pay-TV	12.478H/T15	10 TV	3/4	27(,800)
	Pay-TV	12.518H/T16	10 TV	3/4	27(,800)
	Pay-TV	12.558H/T17	10 TV	3/4	27(,800)
	Pay TV	12.598H/T18	10 TV	3/4	27(,800)
	Pay-TV	12.638H/T19	10TV, 30 radio	3/4	27(,800)
	Pay TV	12.688H/T20	11TV	3/4	27(,800)
B1/160	7 Central DTV	12.365H	1TV	3/4	5(,100)
	Occ. feeds	12.380H	1 TV - *	3/4	6(,111)
	Occ. feeds	12.384V	1 TV - *	3/4	6(,111)
	Net 7 service	12.397H	1	3/4	7(,200)
	Imparja mx	12.379H	2TV + 8 radio	3/4	5(,424)
	7 digital feeds	12.397H	1TV	3/4	7(,200)
	Feeds to NZ	12.411V	1 TV	3/4	6(,111)
	SBS Mux	12.420H	3+ TV, 2+ radio	5/6	12(,600)
	TVNZ DTH	12.456V	5+TV	3/4	22(,500)
	TVNZ Tests	12.483V	up to 11TV	3/4	22(,500)
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(,500)
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(,500)
	Sky NZ	12.644/671V	9TV	3/4	22(,500)
	ABC western	12.610H	5TV	7/8	14(,3288)
	Sky NZ	12.707/734V	8+TV	3/4	22(,500)
P8/166E	ABS-CBN	12.575H	4+TV, 4+ radio	2/3	13(,845)
	NZ tests	12.642V	up to 8 TV	3/4	28(,060)
	JEDI/TVB	12.686H	11+ TV	3/4	28(,126)
	ABC A-P	4180/970H	2TV, 2 radio	3/4	27(,500)
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(,125)
	Taiwanese MUX	4080/1070H	12+ TV	5/6	30(,000)
	NHK Joho	4060/1090H	7TV, 1 radio	3/4	26(,470)
	FOX Mux	4040/1110V	up to 5TV	7/8	26(,470)
	NET+	4121/1029V	1 TV	3/4	4(,774)
	ESPN USA	4020/1130H	8+TV, data	3/4	26(,470)
	Discovery	3980/1170H	8 typ.	3/4	27(,690)
	CalBqt/Pas8	3940/1210H	up to 3+ FTA	7/8	27(,690)
	CNBC HK	3900/1250H	up to 7TV	3/4	27(,500)
	FilipinoMUX	3880/1270V	up to 8TV+radio	5/6	28(,694)
	TaiwanBqt	3860/1290H	12TV + 30 r	5/6	28(,000)
	CCTV Mux	3829/1321H	up to 4 + 1 radio	3/4	13(,240)
	TVBS-N	3836/1314V	1FTA, 4+ CA	3/4	17(,500)
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(,632)
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(,000)
	Discovery Asia	3764/1386V	Up to 6 TV	3/4	19(,850)
	MTV	3740/1410H	8	2/3	27(,500)
P2/169E	WA Mux Pv	12.281V	3+ TV, radio	2/3	27(,500)
	Arlang TV	12.401V	1TV	3/4	4(,400)
	ABS-CBN	12.575H	4TV, 2 radio	13(,845)	
	Test mux	12.715H	6+ TV	2/3	30(,000)
	TARBS feeds	4090V/1060V	9TV + radio	3/4	21(,000)
	BBC SCPC	3986/1164H	1TV	1/2	5(,700)

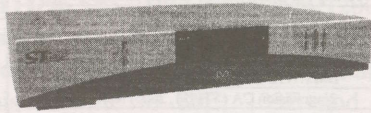
Receivers and Errata

FTA ; Singapore 23hrs, Brunei 1 hr, Brunei V1200 was on 4048V; New Caledonia, parts of Australia FTA SCPC; Australia, New Caledonia, some Eng. Irdeto 2; 4060V HDTV CA; also try 4020V PowerVu; some FTA (Ch. 1 & 3) CA & FTA NTSC; Japan, Taiwan (ApStar 6: also 4180V same #s, some analogue also) also try 3660/3540V, Sr 30,000, 3/4; some FTA North beam; also try 3875R, 12.475, 1/2 Strong NZ & Australia; may now be 1/2, 6.525 Aust East beam - 3 FTA + 14 CA WA only? Skew path, intended Asia differs from 12.407 C1; **tune ch FTA; NZ+Au** T11/lower testing late May 2005 NZ + Au, FTA Mcript CA occ feeds, NZ + Au; recently 12.553V AMTV, Healing only FTA svcs now here High performance beam; not NZ; new PIDS 10-05 High performance beam; not NZ; new PIDS 10-05 NZ + Au (Mcript, PowVu capable) High performance beam; not NZ; new PIDS 10-05 High performance beam; not NZ; new PIDS 10-05 ABC WA tests, FTA SBS, radio tests WA FTA Irdeto V2 CA, tests (GWN, WIN) Now on Australia + NZ beam; SCPCs not currently in use Tests; SBS-NDS CA, others FTA when here NZ (90cm) + Australia (**Only C1 svc left on NZ**) Australia NA only (leakage to Norfolk, New Cal) Australia NA only (leakage); 9-Net x 3 widescreen Arrow radio (still here), tone FTA Pay-per-view movies; CA Pay-per-view movies; CA Pay-per-view movies; CA ABC for Foxtel/Austar; previously 12.288V changes September 2005 Austar inter; **Expo FTA** NDS CA + Mcript, CA CA, subscriptions available Australia, Norfolk Sky News active; 'Help x 2' **FTA** CA, subscriptions avail Au, Nrlrk, **TVSN FTA** CA, subscriptions available Australia, Norfolk 'Home'CA, subscription available Australia, Nrlrk CA, subscriptions available Australia, Norfolk CA, subscription available Australia, Norfolk CA, subscription available Australia, Norfolk Central beam; Freq change 08-05 * - plus 12.451H, 12.460H * - plus 12.293V, 12.402V, 12.411V Full schedule less commercials - links; may be CA PIDs vary; also try 12.360, 12.370 occ. digital feeds; typ fta Often NTSC; USA-Australia-NZ **Also 12.437H, 12.456H** same params; HDTV+WS FTA 7 channels (TVNZ x 4); +Maori, DW, CCTV9 Testing late June; 16:9 added late July NDS CA, subscription available NZ NDS CA, subscription available NZ NDS CA, subscription available NZ also see 12.610, 626, 643, 670, 688, & 706H NDS CA, subscriptions available NZ CA Testing new NZ Ku beam June 2002-Irdeto-2 CA Dateline west; also east PAS2, 3901V PowVu CA Tests - CA service announced PowVu CA & FTA; subscription available was PAS-2, previously 3992Vt; **feeds FTA** NET25 + FTA; new PIDS April '03; reload PowVu CA; ch 11 DCP-CCP bootload; audio **FTA** PowVu/CA (some audio FTA) PowVu CA & FTA (EWTN + CBS + TBN +) NDS CA (6 channels); one test card occ FTA **Myx FTA** V1960, A1920 + radio FTA Mixed FTA & CA; STC gone (CA) PowVu FTA, replaces PAS-2 svc CCTV cross pole; new SR 04-06 PowVu CA PowerVu; some audio **FTA** PowerVu; Asian MUX; new parameters Nov '03 # 8 **MTV China FTA V289, A290**; rest CA PowVu CA, WIN, ABC NT, SBS; status unknown Test - may not stay permanently Temp **FTA**; subs Aust 011-800-2270-0722 initially with 6 NTSC colour bars Occ **FTA** (Chile +); BIG power reduction Nov 03 DD? World moved here January 2005

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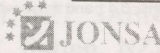
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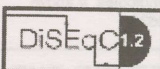
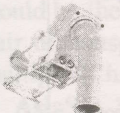
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Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(PAS2/169E)	Adventists.tv	4040/1010H	1	2/3	5(.900)
	Feeds	3868/1182H	1	2/3	6(.620)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(.620)/7(.498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(.800)
	HK bouquet	3850/1300H	up to 8	2/3	24(.900)
	Korean Bqt	3771/1379H	1	3/4	6(.510)
AMC23/172E	Various-tests	12.730H	up to 8	3/4	30(.000)
1804/174E	iPSTAR	12.619H	1	2/3	25(.220)
	Tests-NZ beam	12.646H	1	3/4	22(.418)
	RFO Poly	4027/1123R	1TV	3/4	4(.566)
1701/180E	TNTV	11.060&11.514V	9	3/4	30(.000)
	TVRFO	11.136V, 11.174V	6+TV, 3+ radio	3/4	23(.149)
	Canal+Sat	11.610H	16TV, 1 radio	3/4	30(.000)
	PBS	12.648HH	16TV possible	3/4	28(.066)
	TVNZ/BBC	4186/964RHC	1	3/4	5(.632)
	TVNZ	4178/972RHC	1	3/4	5(.632)
	AFRTS DTS	4175/975L	3 TV, 3 radio	2/3	3(.680)
	TVNZ/Aptn	4170/980RHC	1	3/4	5(.632)
	Fiji Sky Pacific	4095/1055LHC	6TV + future radio	3/4	16(.505)
	Fiji Sky Pacific	4055/1095LHC	7TV + future radio	3/4	16(.505)
	TVNZ/feeds	4052/1098RHC	1	3/4	5(.632)
	TVNZ feeds	4044/1106R	1	3/4	5(.632)
	NBC to 7 Oz	3960/1190R	1	7/8	6(.447)
	TBN Mux	3927/1223R	4TV	2/3	11(.394)
	WorldNet	3886/1264R	1TV, 37 radio	3/4	25(.000)
	Ioarana	3772/1378L	1	3/4	4(.566)
	NASA TV	3854/1296R	1 TV	3/4	2(.000)
	TVNZ	3846/1304R	1	3/4	5(.632)
	NBA (Barker) Ch	3803/1347R	1	3/4	6(.111)
	USA feeds	3749/1401R	4?	?	26(.400)
NSS-5/177W	Pacific IP Data	3763/1387R	none-data	3/4	27.5
	BYU-TV	4185/965R	1TV, 20+ audio	1/2	6(.525)
	iPSTAR Tests	12.691V	8 TV	5/6	17(.600)

Receivers and Errata
New December 2003; 24/7 "Hope Chs."
FTA (occ sport); also try 3863, Sr6.100
FTA-typ NTSC-occ sport, live Shuttle
PowVu CA + FTA (includes BBC-W 05-05)
was 4148Vt; some FTA
Korean MUX, reload 12-04; new Sr
Testing on NZ/East Australia beam
Tests, late May start; also 12.646H
Testing possible data links; June 2003
SE spot beam; was 4027LHC
east spot; 10TV + r each, vertical pol.
FTA 11.136 Tahitian beam, 11.174 west beam; 12/04
1+ FTA, MediaGd "2"; + 10.975 weaker
Testing Fiji region pay-TV (MDS) package (Oct '04)
DMV/NTL early vers. occ feeds, typ ca
DMV/NTL early vers., occ feeds, typ ca
'DTS Direct to Sailors; audio previously FTA - gone
DMV/NTL early vers. occ feeds, typically ca
Nagravision CA (> Feb 1, 2005) New PIDS
All now (including Fiji 1) CA; 7 Feb, 2005
DMV/NTL early vers. occ feeds, typ ca
SCPC, mixed CA and FTA feeds
CA, Leitch encoded
January 2006-now 4 channels, new Sr
New PIDS Dec 03 very strong NZ, Pacific
FTA SCPC; East Hemi Beam-Tahiti
24/7 live NASA - West Hemi bn (can be difficult!)
SCPC, mixed CA & FTA, feeds
NBA feeds - probably CA - new Nov 2003
16-QAM (not MPEG-2 compatible)
Data only but useful for dish alignment
Global beam - requires sizeable dish
CA Tests - Taiwan TV: data coming?? (NZ beam)

MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness!)

AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. AV-COMM P/L, 61-2-9939-4377.

AV-COMM Tiny Tot. FTA, 12Vdc operated, palm sized, low power consumption; review SF#120. Contact # above.

Coship 3188C. Review SF#107. Blind search FTA rcvr; works well. Phoenix Technology Group (www.phoenixsatellite.com.au) (Irdeto 2 as well as FTA versions)

Divitone: "Left-handed" review SF#115; does "code key" entry. Available <http://www.satmax.ws>

eMTECH eM-100B (FTA), eM-200B (FTA + Cx2), eM210B (FTA + 2xCi + positioner); KanSat 61-7-5484 6246 (review SF#89)

Fortec Star Lifetime. Two versions, both blind search, code-key programmable, one X 2 Ci. Review SF#119. www.aDigitalLife.com

Humax ICRI 5400 (Z). Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available; new software avail 04-04, SF#76.

Humax IRCI 5410 (Z). Adaptable version capable of holding multi-CA systems (SF#98, 99). Widely available; original importer Sciteq (www.sciteq.com.au).

Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.26/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good.

Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.

Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.

INNOVIA IDS3088. Review SF#111. Blind search FTA receiver. High quality IRD; available Phoenix Technology Group, and Satmax (<http://www.satmax.ws>).

ID Digital CI-24 Sensor. New August 2003; new lower noise tuner, extra sensitivity; CI Interface slot Irdeto 1 & 2; review SF#109. Sciteq 61-8-9409-6677.

KSF-570 FTA digital receiver, import; KSC-570 adds CI x 2 (no test or user results available). Asoft Limited, 64-4-234-1096

KSC-M550H2 'Premium Dual DVR' digital receiver (no test or user results available). Asoft Limited, 64 4 234 1096

MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777

MediaStar D10. FTA and Irdeto embedded CA. VG receiver; see review SF#96, August 2002. Contacts immediately above.

MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738

Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. SF#95, p. 14.

Nokia 9200/9500. When equipped with proper software, does Aurora, originally did pay-TV services provided software has been "patched" with "Sandra" or similar program. See SF#95, p. 14, SF#96 p. 15. SatWorld 61-3-9773-9270 (www.satworld.com.au)

Pace DGT400/DVR500. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818). UECs replaced.

Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version (see SF#115, p. 15).

Phoenix 111, 222, 333 models (no longer produced): Service, backup - Phoenix Technology Group 61 3 9553 3399; www.phoenixsatellite.com.au

Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal ++687-43.81.56)

PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, CMT etc). For service only - call Scientific Atlanta 61-2-9452-3388. For revision model D9850, see Scientific Atlanta (below).

PowTek. Blind Search Chinese sourced, field tests rate it highly. Source jason@aDigitalLife.com

Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.

SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-356-2749); no longer available.)

SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above); no longer available.

SATWORK ST3618. Blind search FTA receiver. Fast search, problems, especially in "memory-filing" system; review SF#111. Available DMSi at tim@dmsiusa.com.

SATWORK ST3688. Blind search, 3000+ ch memory, multi-format RF modulator, improved version 3618. Review SF#113; available DMSi (above).

Scientific Atlanta D9223, D9234, D9225; Orig. PowerVu, superseded Dec 2003 by D9850. Commercial receiver, available TVO 61-2-9281-4481, John Martin

Strong Technologies SRT2620. SCPC, MCPC FTA, exc sensitivity, ease use, programming. Review SF#91 (ph. below).

Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#84. Strong Technologies 61-3-8795-7990.

Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, does code-key with additional software, Aurora. Strong Technologies 61-3-8795-7990.

Strong 4800 II. SCPC, MCPC CAM slots x 2 for Aurora +, Zee, Canal +, code key with additional software. Strong Technologies (above); review SF#103.

Strong 4890. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSeqC 1.0, 1.2 (review SF#84), does code key with additional software; Strong Technologies, # above.

UEC Atlas/Titan (1000). New July 2003, replacing DGT400 for Austar. No SCART, L-band loop; also available Rural Electronics 61-2-6361 3636.

UEC642. Designed for Aurora (Irdeto), approved by Optus; w/own software, C-band FTA; faulty P/S. Norsat 61-8-9451-8300.

UEC660. Upgraded UEC642, used by Sky Racing Aust., Foxtel, limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.

UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers; propensity to fall off back of trucks.

Voyager. Two models (08-05); one FTA auto scan, 6000 ch memory; one multi-CA format CAM. satlinknz.co.nz

Winersat DigiBox 200. C + Ku basic receiver but includes Teletext for NZ TVOne, 2 VBI. satlinknz@satlinknz.co.nz, fax 64-9-814-9447; long term teletext problems (loses TT).

"X" Digital. When modified with "aftermarket" Internet software, does Aurora and other V-1 CA without card; review SF#119. Strong Technologies (61-3-8795-7990).

Accessories:

Aurora smart cards. MCRYPT (Irdeto V2) cards now available (Jan 2005), Sciteq 61-8-9409-6677.

PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 3/4; pgm ch 11 and follow instructions (do not leave early!)

PowerVu (Pacific) repair service: Cable & Sat Svcs, Darius West, 61-2-9792-1421 (Email darius@cases.net.au)

WITH THE OBSERVERS

AT PRESS DEADLINE

AMC23 - 172E, showing more signs of future activity daily. A suitable warning from posting on Apsattv: "The present FTA services here are test and nobody should be jumping to sell installations based upon these signals; too early yet!"

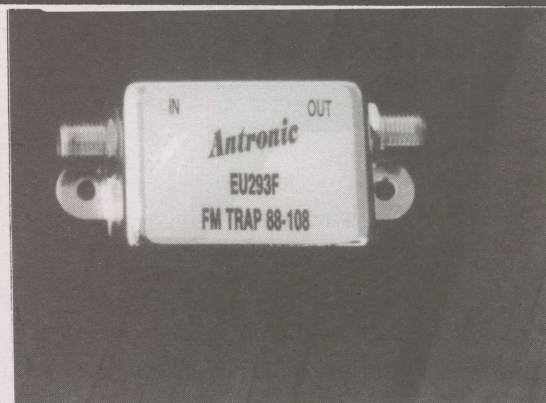
Launch schedules: JCSAT 9 to 132E, was scheduled for April 11; Ku only, Japan.

AM11/96.5E: This nearly new (2004) satellite has failed in orbit (March 29), reason unknown but damage by a flying piece of debris suspected. Major Russian shuffling of services on this satellite to 80E, 103E and some to 140E. The preliminary findings are as follows: (1) Something external to the spacecraft struck it, breaking the pressurised skin, (2) the internal electronics region depressurised, (3) the fluid based heat/cooling system shot through the roof (temperatures went off the scale), and, (4) the spacecraft promptly loss orientation and the satellite began tumbling (rotating on its own central axis). Less the penetration of an external object, there are significant similarities here between AM11 and B1, two days later. Does someone have a rogue satellite killer roaming the geostationary orbit belt? Osama??? Oh yes; AM11 was 'removed from geostationary/Clarke orbit' to prevent it from becoming a 'rogue killer' itself and damaging other nearby satellites (such as As2).

AMC23/172E: "12.730H on NZ + (eastern) Australia beam, testing, Sr typically 30.800, 3/4 with various feeds including at one point India v. England cricket." (Virgil P.) "A group of ethnic and religious channels, lifted from B3 and elsewhere, including TRT, SET, 3ABN and more, have been testing on 12.730H." (C. Sutton, NZ) "Carriers have been noted on Ku frequencies of 12.540V, 12.610V, 12.692V (Sr 6.510, 3/4), 12.705V (Sr 1.776, 7/8, data), and the fore mentioned 12.730V (some report H; logic suggests all NZ beam signals are at this time one, not two, polarisations and some report the polarisation setting of LNB is 'very critical')."

ApStar 6/134E: "Two PAL analogue transponders, Yunnan TV (4000H) and Guizhou (3960H) have left service leaving one still operating on H and two on V." (Arnie) (Editor's note: They apparently shut down on April 1 - as we were testing using their channels March 31 not aware it would be the last day for them to be operating. This vacates a pair of transponders which will undoubtedly be refilled with multiple (Chinese) digital programming channels.)

AsiaSat 3S/105E: "Al-Jeezera promo on 3760H, V1090, A1091." (Bill H.) (Editor's note: Launch of ALJ English has been pushed back to "mid-year" and US authorities have ruled the channel cannot be shown there.) "World Fashion Channel, 3760H, is now shut-down, apparently moving to



Antronic model EU293F is best performing of 3 consumer-available FM band (88-108MHz) in line traps (see p. 7, here). Trap needs to be installed within 1 or 2 metres of TV aerial cable connection point provided cable is double, tri or quad shielded. If cable quality is poor, it will actually also function as an antenna and in this case trap should go just ahead of signal splitter, or TV receiver if no splitter.

Measat 1 (3924H)." (Humphrey) "Eurosport World 3760H is now CA." (Anthony)

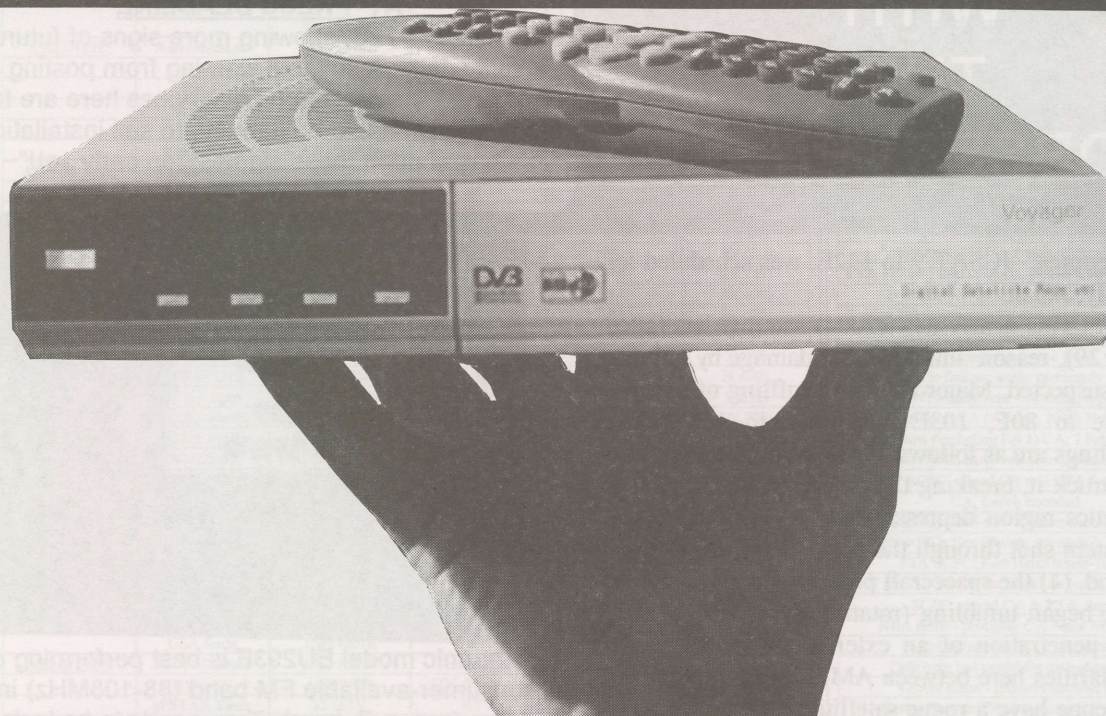
Express 2/103E: "This bird, sandwiched between As2 and As3, suddenly has significantly more traffic as result of failure of AM11 at 96.5E. From locations such as New Zealand, Express 2 is actually under 2 degrees offset from As3 and some SCPC As3 services (such as those near to 3925 H or V) are getting interference as a result. On 103E, try 3925(RHC but it will show on linear), Sr 4.882, FEC 1/2; 3675RHC, 4.340, 3/4; 3875RHC, 29.650, 3/4; 3609RHC, 4.275, 3/4; 3615RHC, 3620, 3.215, 3/4, 3632RHC, 4.332, 3/4. With more coming, the effects on As2 and As3 will be many." (Tommy H.)

Optus B1/160E: "ABC Western Mux 12.670H has swapped with ABC NSW on 12.610H." (Brady, NSW)

PAS-8/166E: "PAS-8 Ku beam apparently boresighted on NZ is now testing (12.642V, Sr 28.060, 3/4)." (C. Sutton) (Editor's note: PAS-8 beam switch from Asia was originally scheduled for November; if nothing else, this could be a home for a NZ DTH FTA service on behalf of terrestrial broadcasters. Significant question is how far north and east does this NZ Ku beam extend - reports please from outside NZ and Australia?) "TVBS 3836V is now Sr 17.500 while on

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. **Photos of yourself, your equipment** or off-air photos taken from your TV screen **are welcomed**. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for May 15th issue: May 4th by mail or 5PM NZT May 5th if by fax to 64-9-406-1083 or Email skyking@clear.net.nz.

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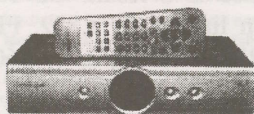
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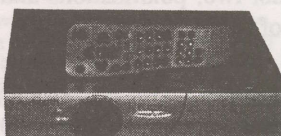
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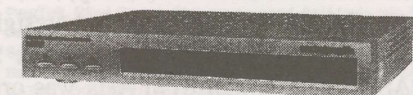
DSR-807

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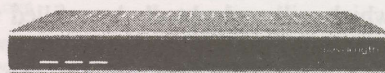
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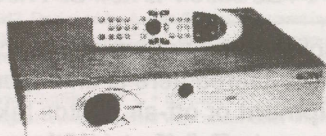
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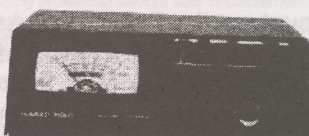
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3851V, Sr is 9.953." (Hampton)

Palapa C2/113E: "TV5 Asia has closed down, replaced by a test card advising viewers to switch to As3." (Steve J, NZ).

Soapbox: "Maybe, perhaps, cross your fingers that NZ authorities and the two remaining FTA-only broadcasters (TVNZ and CanWest, representing TV1, 2, 3 and C4) appear to be nearing agreement favouring a business plan to convert country's analogue television to a digital format. TVNZ has purchased/reserved 'Freeview' name (as used in the highly successful UK conversion system) and while nobody will get specific, rumours strongly suggest they are favouring a satellite service rather than terrestrial. IF - if this turns out to be true (a formal meeting with government Minister of Broadcasting Steve Maharey scheduled for 'sometime in May'), and DVB-S is adopted as a national platform, I predict a ground swell of technical personnel will pop out of retirement and the woodwork in support of converting the 1,000,000 or so homes to satellite which have to date ignored the 5 phone calls each week from Sky marketing folks. Nothing motivates like, 'get yourself digital-equipped or miss Coronation Street!' " (Michael L, Auckland) (Editor's note: There is one further slight reason for optimism - Jo Tyndall, appointed by TVNZ to oversee Digital Broadcasting Strategy, has been recently quoted expressing view, "(with satellite) there is the catastrophic failure (of the satellite) issue. The impact could be significant if all broadcasting services were concentrated on one satellite." This statement came out almost parallel to the 14 hour failure of B1 shutting down the Sky NZ bouquet. B1, to be replaced by D1 later this year, has until recently been the only option for a second relay service. Now however, we have PAS-8 Ku boresighted on NZ and AMC23 boresighted on NZ + portions of Australia, giving planners a new set of bird choices.) "Guess what. Sky NZ's much promoted 'My TV' built around use of a hard drive (TiVO clone) STB-recorder apparently only works if there is a satellite signal at the input when trying to playback a previously recorded show. Many folks resorted to their new 'My TV' machine during the 14 hour outage, and discovered an on-screen message reading, 'No satellite signal is being received. PDR requires a signal to be able to play back programs.' Of course satellite failures are rare, and wanting to watch something on your 'My TV' machine when there is no operating satellite may be even more uncommon. Unless of course you unplugged 'My TV' and carried it away to the Bach for the weekend confident (in error) it would allow you to zip through the hard drive record. OK Sky - what did you 'forget' to tell us when we bought into this 'My TV' scene???" (David J, Auckland) (Editor's note: This is either a major software glitch or some very clever, new Digital Rights Management - DRM - language buried inside the 'My TV' box. The new Blu-Ray HD DVD planning, not yet implemented, has just such a system in the software that goes one step further - if the user attempts to playback 'unauthorised software' the player shuts down and will require a service shop reset. Sony learned how consumers react to such over-the-top rights management when it attempted to force something called 'rights management' into audio CDs. Several consumers are taking Sony to (US - where else!) court for failing to be up front with this 'special trick' which was discovered only when people attempted to use their CDs in what to them was a 'normal' way. Sony sales plummeted when this became known through the web. Is 'My TV' headed

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for a similar consumer response???) "My Fortec Ultra plays Russia Today on AMC23, 12.730V but the eMTech 300 PVR does not want to know the service - although it plays the rest." (MF, NSW) "Sky Business (a division of Sky NZ) has created an anti-piracy hotline where they encourage field reports from those who would turn-in people who are mis-using their service. Example? A home system moved to a bar or business to avoid paying the much higher commercial rates. Telephone 0800 759 8443; anonymous." (Ned) "Hold onto your bandwidth hats - a Massachusetts firm (Euclid Discoveries; www.eucliddiscoveries.com) claims to have created a compression algorithm which improves existing MPEG-4 by a ratio of 15,168 to 1; a 460% improvement. In what? The same video material in a tiny fraction of the bandwidth now required. Which means? Full motion, VHS-S or better video quality on a standard POTS (plain old telephone system) 'dial-up' line, for example. They claim they can reduce a 23 MB video file into a 1,519 byte file, enabling sub-4Kbps, low bandwidth streams for wired and wireless applications. The firm, rightfully if their claims hold up to scrutiny, says 'It took fifteen years to move from MPEG-2 to MPEG-4, a 50% improvement; now we have gone from 50% to 460%.' They have 15 patent applications on file, which if granted and accepted by the industry, will certainly put their kids (and grand kids) through University." (Sheila L, Ohio) "Locally, KTVU/Fox is offering their newscasts to cell phone users. The station also has an auto-shopping service on their web-site; www.KTVU.com." (Tim Alderman, California). "British based Envision reports that the number one country in the world for pirating video off air (FTA or pay) for redistribution is the UK. The second

rated 'piracy country'? Glad you asked: Australia, says Envision. Copies of recent British and US programs end up on the net within hours, or less, and the major social group involved are 18-25 year old males according to the research project. Channel Seven tops the pirated show list." (IF, Qld.) "The Australian Government, through Communications Minister Helen Coonan, proposed moving the analogue TV switch-off date to 2010 for capital cities and 2012 for regional/rural areas. 'Free STBs' remains one possibility to encourage the present plateau of analogue to digital conversions to rise above today's 15% level. Under Coonan's proposal, ABC and SBS will be allowed to offer a variety of programming although commercial networks (7, 9 and 10) will have to wait until 2010 to do so. The present limitation that prevents Rupert Murdoch/News Corp from owning TV network holdings would be eliminated. And as for sport, terrestrial networks which purchase rights but then do not use (broadcast) those rights would have to give them up (to pay-TV)." (AI, Victoria) "UBI airs some pretty strange programming - for example on March 13th I found on their SCTV channel a program the guide called 'Nova Cast TV' which apparently originates from NSW's Newcastle. The program was all about nudist bike riders, wearing only helmets and shoes (www.worldnakedbikeride.org). Until I saw this program, I was convinced the most offensive thing Muslims might find on it was a beauty pageant." (NS, NSW) "EchoStar admits 'hackers are back', less than six months after the firm replaced all smartcards in their 11 million home universe. The software and cards come from Swiss firm Kudelski SA, and the hack appears to involve 'one for all - all for one' or '3 Musketeer' cloning of cards." (RL, Denver)

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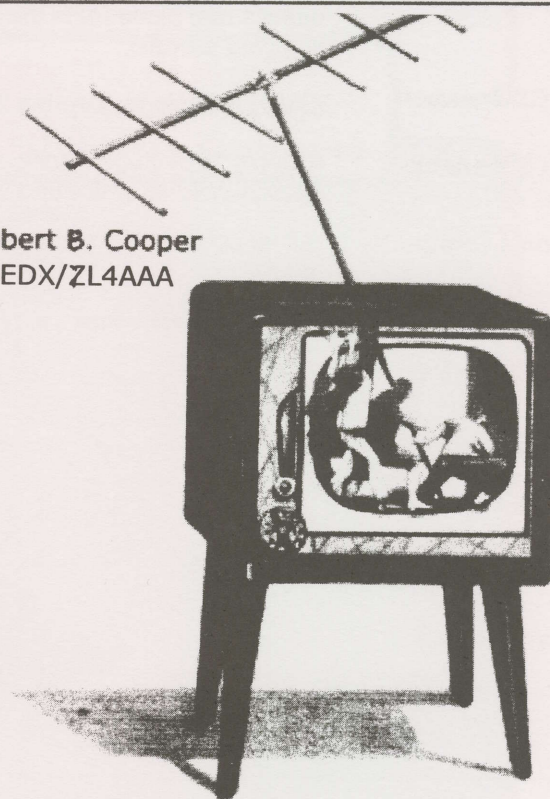
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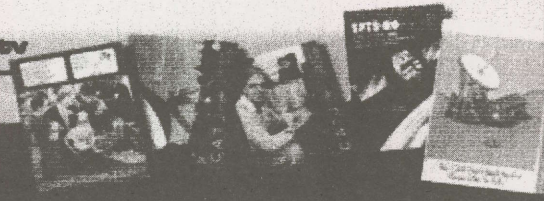
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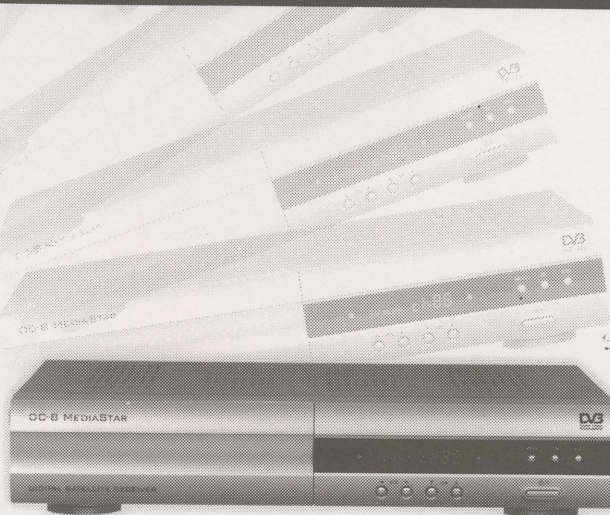
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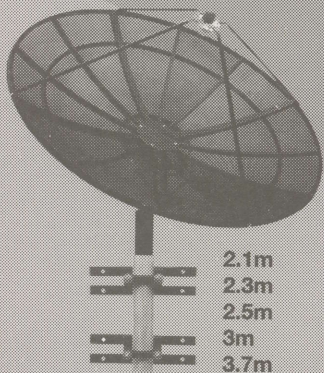
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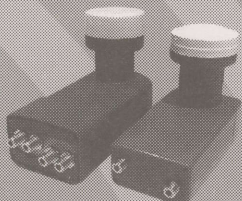
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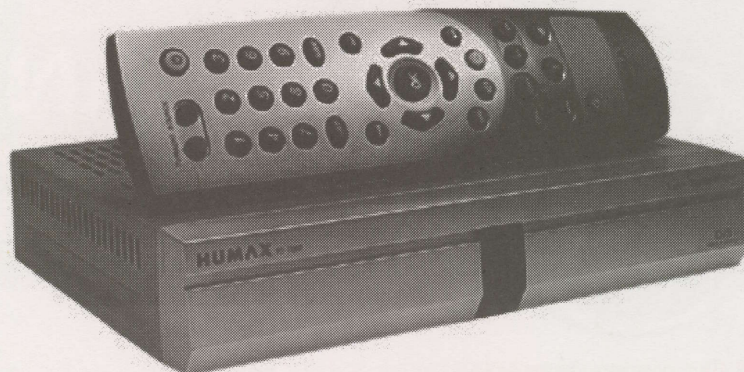
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